

**City of Ramsey**  
**Agenda**  
**Public Works Committee**  
**Tuesday October 18, 2011**  
**5:30 pm**  
**Lake Itasca Room, 7550 Sunwood Drive NW**

- 1. Call to Order**
- 2. Citizen Input**
- 3. Approve Agenda**
- 4. Approve Minutes**
  1. Approve Public Works Committee Meeting Minutes dated August 15, 2011
- 5. Committee Business**
  1. Consider Vacation of Right-of-way at 14241 Fluorine Street NW
  2. Consider Proposal from Metro Area Repeater Association to Install Skywarn Facilities on Water Tower #2
  3. Contracted Street Sweeping
  4. Sanitary Sewer Maintenance Policy
  5. Consider Change Order for City Improvement Project #11-09; Alpine Drive Overlay
  6. Consider Guard Rail Enhancements for the Parking Ramp
- 6. Committee/Staff Input**
  1. Update on Resident Concern at 5220 156th Lane NW
- 7. Adjournment**

**Public Works Committee**

**4. 1.**

**Meeting Date:** 10/18/2011

**By:** MaryJo Warner, Engineering/Public Works

**Title:**

Approve Public Works Committee Meeting Minutes dated August 15, 2011

**Background:**

n/a

**Notification:**

**Observations:**

**Funding Source:**

n/a

**Staff Recommendation:**

**Committee Action:**

Motion to approve attached Public Works Committee meeting minutes dated August, 15 2011.

**Attachments**

Minutes 08.15.11

**Form Review**

**Inbox**

Brian Olson  
Kurt Ulrich

**Reviewed By**

Brian Olson  
Kurt Ulrich

**Date**

10/13/2011 08:44 AM  
10/13/2011 03:29 PM

Form Started By: MaryJo Warner

Started On: 10/11/2011 01:53 PM

Final Approval Date: 10/13/2011

**PUBLIC WORKS COMMITTEE  
CITY OF RAMSEY  
ANOKA COUNTY  
STATE OF MINNESOTA**

The Public Works Committee conducted a regular meeting on Monday, August 15, 2011 at the Ramsey Municipal Center, 7550 Sunwood Drive NW, Ramsey, Minnesota.

Members Present:                   Chairperson Colin McGlone  
  Councilmember David Elvig  
  Mayor Bob Ramsey

Also Present:                       City Administrator Kurtis G. Ulrich  
  Public Works Director Brian Olson  
  City Engineer Tim Himmer  
  City Attorney William Goodrich  
  Street Supervisor Grant Reimer

**CALL TO ORDER**

Chairperson McGlone called the regular meeting of the Public Works Committee to order at 5:30 p.m.

**CITIZEN INPUT**

There was none.

**APPROVE AGENDA**

Motion by Mayor Ramsey, seconded by Councilmember Elvig, to approve the agenda, as presented.

Motion carried. Voting Yes: Chairperson McGlone and Mayor Ramsey, and Councilmember Elvig. Voting No: None.

**APPROVE MINUTES**

Motion by Chairperson McGlone, seconded by Councilmember Elvig, to approve the minutes from the July 19, 2011, Public Works Meeting.

Motion carried. Voting Yes: Chairperson McGlone and Councilmember Elvig, and Mayor Ramsey. Voting No: None.

**COMMITTEE BUSINESS**

**Case #1:       Review Standard Contract Language Related to Construction Projects**

City Engineer Himmer reviewed the staff report. He highlighted contract language related to construction projects and explained how these conditions would assist the City in ensuring projects would be executed and completed in a timely and quality manner.

Public Works Director Olson further discussed the time periods for contracts and explained how defective issues could be dealt with.

The Committee discussed examples of construction projects completed in the City and the best language/standards that could assist with quality, ensuring projects are completed within the allotted time, and enforcement of the contract.

Mayor Ramsey stated that it would not be possible to draft standards which would address every situation and noted these standards should ensure that defective or neglected projects are addressed, or corrected, as soon as possible.

Public Works Director Olson explained how weather delays are taken into account for construction projects.

City Engineer Himmer stated he believed the language was sufficient and noted the issue would be more with enforcement. He advised that input has been received from contractors regarding the policy of the City to not close out projects until every item is completed and explained that is affecting the ability of contractors to bond for additional projects. He questioned the appropriate time to finalize a project.

Chairperson McGlone stated that in his contracts, it states final payment is due upon substantial completion of the project.

Public Works Director Olson noted that only 5% of the final payment is being held, but explained that a performance bond is required equal to the total project amount.

City Engineer Himmer explained the bonds that are held and used for construction projects, performance bonds and warranty bonds. He advised of three upcoming projects which are proposed to final out at the next Council meeting. He noted that if staff believes the work is substantially complete, staff would not be opposed to releasing the performance bond in return for a warranty bond. He asked if the Committee would agree to add a 3% contingency into contracts, which would provide staff with flexibility when something unexpected arises during a project.

The Committee further discussed project management and the understanding that while this would assist staff, staff should still attempt to resolve issues prior to using the contingency funds.

It was the consensus of the Committee to agree with the recommendations from staff regarding the close out of construction projects with minor outstanding items, and the Council can determine whether it is acceptable for outstanding items to be covered by the warranty bond for the project.

Motion by Mayor Ramsey, seconded by Councilmember Elvig, to recommend that the City Council include a 3% construction contingency, up to \$15,000, on all projects with City Administrator approval. This would give staff the ability to effectively manage projects to account for unforeseen conditions and necessary project revisions.

Motion carried. Voting Yes: Chairperson McGlone, Mayor Ramsey and Councilmember Elvig.  
Voting No: None.

**Case #2: Update on Recent Storm and Flooding Complaints**

City Engineer Himmer reviewed the staff report. He briefly reviewed the properties that have submitted storm and flood complaints. He stated that staff is proposing to prepare plans and specifications, receive quotes, and address the immediate actions identified in the report, such as repairing or replacing a culvert.

The Committee discussed the high levels of rain and the number of 100-year events that have taken place this year; noting the system within the City has performed well under the conditions.

Motion by Mayor Ramsey, seconded by Councilmember Elvig, to recommend that the City Council authorize staff to prepare the necessary plans and specifications, and receive quotes, to address the immediate corrective actions identified in staff's summary.

Motion carried. Voting Yes: Chairperson McGlone, Mayor Ramsey and Councilmember Elvig.  
Voting No: None.

**Case #3: Discuss Grading Permit Requirements**

City Engineer Himmer reviewed the staff report. He noted that the City currently does not have a grading permit and advised that staff has been drafting requirements which could be used.

The Committee discussed the adoption of the State Building Code and whether all sections of that Code were adopted; staff believed that the section regarding grading permits had not been adopted with the Code.

City Engineer Himmer suggested that a grading permit be treated similar to an interim permit, in regard to the fee schedule. He confirmed that an erosion control plan would be required with a grading plan.

Councilmember Elvig agreed that a grading permit should be developed and noted that education would become a factor as well.

Public Works Director Olson stated that staff does not want to cause undue hardship, or charge additional fees, but wanted to ensure there are requirements which a grading permit can be gauged against.

City Engineer Himmer further explained the proposed administrative grading permit process and provided comparison information currently used by other neighboring cities.

The Committee discussed the threshold levels at which a grading permit would be required, as well as the associated cost.

It was the consensus of the Committee to verify if the grading portion of the State Building Code had already been adopted and recommend that an administrative grading permit process be developed.

#### **COMMITTEE / STAFF INPUT**

Public Works Director Olson reviewed a response received from Anoka County regarding the issue of access on Sunfish Lake Boulevard; noting that the County would not participate in the study.

City Engineer Himmer provided an update regarding the County Road 5 overlay and the request for night work, noting that the Council would review the request the following week. He also provided an update regarding WMO regulations which would also be reviewed the following week by the Council.

#### **ADJOURNMENT**

Motion by Mayor Ramsey, seconded by Councilmember Elvig, to adjourn the Public Works Meeting.

Motion carried.

The regular meeting of the Public Works Committee adjourned at 6:58 p.m.

Respectfully submitted,

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Brian Olson  
Public Works Director /Principal City Engineer

Drafted by Amanda Staple  
*TimeSaver Off Site Secretarial, Inc.*

**Public Works Committee**

**5. 1.**

**Meeting Date:** 10/18/2011

**By:** Tim Himmer, Engineering/Public Works

**Title:**

Consider Vacation of Right-of-way at 14241 Fluorine Street NW

**Background:**

This summer staff received a building permit application for the construction of an accessory structure at 14241 Fluorine Street NW. All zoning requirements (setbacks, etc.) were complied with for this permit, but the homeowner had to shrink the size of the structure because it initially exceeded the size requirements related to his existing parcel size. The property owner requested whether the platted right-of-way (ROW) for the cul-de-sac bubble could be vacated, and thus increase the overall size of his lot thereby allowing construction of an accessory structure at the size he originally desired. Due to time constraints he moved forward with his building permit, and has since completed the work.

During the process the property owner commissioned the preparation of a certificate of survey to verify property size. It was discovered that a small segment of City trail was encroaching on his property in the northwest corner. He is not overly concerned with the trail encroachment, and would be open to a formal dedication of easement in exchange for the ROW vacation. The survey also brought about a resident concern that his existing home may not meet City setback requirements, since the ROW for the cul-de-sac bubble is approximately 15' from the garage. Technically the existing structure is considered legal non-conforming for setbacks. If the cul-de-sac bubble is allowed to be vacated the property would pick up enough land to take away this legal non-conforming use, but would make it difficult for a cul-de-sac to be constructed.

**Notification:**

**Observations:**

Since the roadway extension and connection to the neighborhood to the north is no longer feasible due to home construction, a cul-de-sac should be constructed to improve maneuverability at this dead-end location. Flintwood Terrace Park is located on the west side of the street so it may be feasible to construct an offset cul-de-sac without impacting another residence. Staff will review whether an adequately sized cul-de-sac can be constructed within the remaining ROW, or on the adjacent park land with minimal disturbance. Based upon the findings of this preliminary design we can then decide how much (if any) ROW could be vacated. It would then be up to the Council to determine whether the cul-de-sac should be built within the existing ROW as dedicated, or a vacation is warranted.

**Funding Source:**

The review of this request is being handled by staff time. Should the Council be open to this ROW vacation a formal process, including a public hearing would be required, and it must be decided whether the City would process this request internally or whether the property owner would be required to submit a formal application and pay the required fees/escrows.

**Staff Recommendation:**

**Committee Action:**

Based upon discussion.

Attachments

Location Map

Vacation Sketch

Form Review

**Inbox**  
Brian Olson  
Kurt Ulrich

**Reviewed By**  
Brian Olson  
Kurt Ulrich

Form Started By: Tim Himmer

**Date**  
10/13/2011 11:23 AM  
10/13/2011 03:42 PM  
Started On: 10/12/2011 11:20 AM

Final Approval Date: 10/13/2011



**PROPOSED VACATION LOCATON**



**Flintwood  
Terrace Park**

**TRAIL ENCROACHMENT**

**Public Works Committee**

**5. 2.**

**Meeting Date:** 10/18/2011

**By:** Tim Himmer, Engineering/Public Works

**Title:**

Consider Proposal from Metro Area Repeater Association to Install Skywarn Facilities on Water Tower #2

**Background:**

The City has received a request from the Metro Area Repeater Association (MARA) to place their facilities within water tower # 2, located on Sunwood Drive. This equipment would be used as a public service by Skywarn spotters and amateur radio operators. MARA is a volunteer/donations based organization that manages and maintains a series of radio links and repeater sites throughout the Twin Cities area. Coverage within the northwest metro area is lacking and they have identified Ramsey, and water tower #2, as an ideal location for improved coverage within this area. Please see attached information from MARA related their request.

They are specifically requesting space to mount their radios, batteries, antennas, and cables. They are also requesting this space to be donated, and that the City also cover the cost of the electrical usage for these facilities as well. They will also need access to the tower for required maintenance, repairs, and upgrades; which would need to be coordinated through the utility department during regular business hours and on-call staff during non-business hours.

**Notification:**

**Observations:**

Staff notified the group that we would want our consultant to review their plans and perform inspections as the work was being performed to insure that their proposed piercings and connections would not damage the existing tower structure or coatings. Staff contacted Bob Kollmer, who has performed inspections on all towers constructed in the City, to receive a quote for such work. He responded that it would cost approximately \$1000 - \$1500, and MARA responded that this amount was basically their entire operating budget for the year. They feel this amount may be excessive for what they believe is less than a days work so they would like to discuss the matter with the City Council. Based upon direction we can finalize discussions with MARA and Bob Kollmer to further refine the estimates and determine whether this project is feasible at this time.

**Funding Source:**

MARA is requesting free space in the water tower and coverage of the electrical charges to run their equipment, which they state would amount to approximately running a 60 watt incandescent light bulb.

**Staff Recommendation:**

Staff doesn't believe this work would adversely affect the existing usage of the tower, or impact SCADA communication. At a minimum they should be responsible for all costs associated with the installation and inspection of their facilities. If they should desire access to the tower during non-business hours it would necessitate the use of all-call personnel, which would cost approximately \$100 per visit. Use of space for their facilities would also limit the available free space on the tower, and potentially impact the ability to secure new users and lease revenue.

**Committee Action:**

Based upon discussion.

MARA Proposal

Amateur Radio Brochure

Amateur Radio and Public Safety Information

Form Review

<b>Inbox</b>	<b>Reviewed By</b>	<b>Date</b>
Brian Olson	Brian Olson	10/13/2011 08:51 AM
John Nelson	John Nelson	10/13/2011 10:35 AM
Brian Olson	MaryJo Warner	10/13/2011 10:36 AM
Kurt Ulrich	Kurt Ulrich	10/13/2011 03:48 PM
Form Started By: Tim Himmer		Started On: 10/12/2011 11:22 AM

Final Approval Date: 10/13/2011



# Proposal for Ramsey City Council

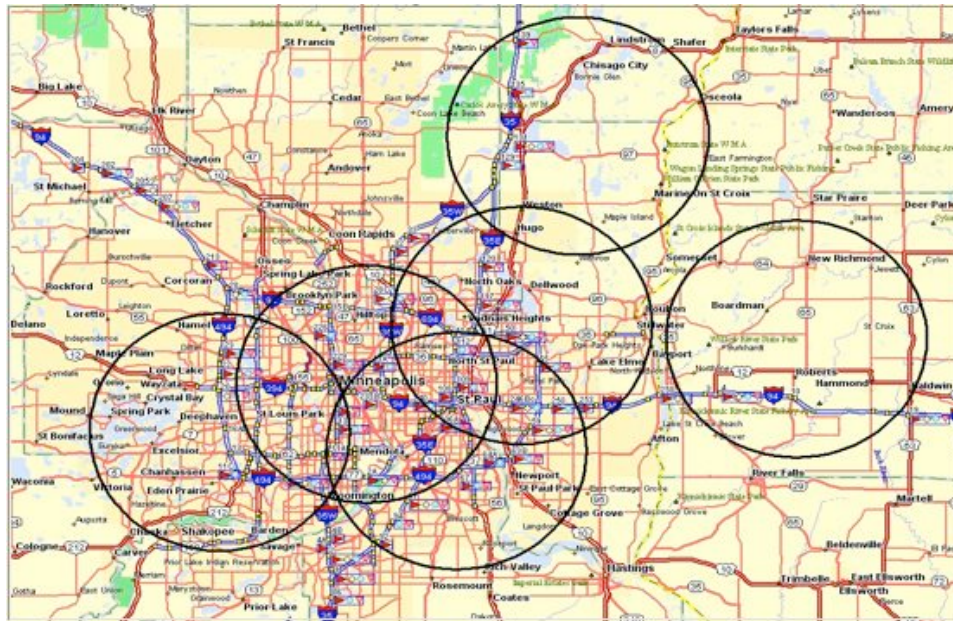


## Synopsis

This proposal is for the placement of a small antenna and related radio repeater equipment on water tower #2 for the use of Skywarn spotters and amateur radio operators as a public service.

## Details

The metro area repeater association (MARA) manages and maintains a series of radio links and repeater sites throughout the Twin Cities area as shown in the map below:



As you will note on this coverage map, there is no solid coverage in the North West metro area, which is what this location would solve.

Many of the other locations around the Twin Cities are placed on similar water towers, and peacefully coexisting with various city radio services, commercial radio services, and cell phone services. The general policy for MARA is If any interference is noted, the system is immediately taken offline, a solution created and tested, and then brought back online. All the repeater equipment is remotely controllable by MARA's engineers, and local site contacts are established for quick response when required.

All we ask for is space to mount the equipment, maintenance access for any repairs required, and a small bit of power to run it. All labor and equipment to install and maintain the antennas and repeater radio system will be provided by MARA engineers working with city engineers to comply with any specific requirements.

## Technical Details

The system draws the equivalent power usage of a 60w light bulb. This would be a "Remote Receive" site for the system.

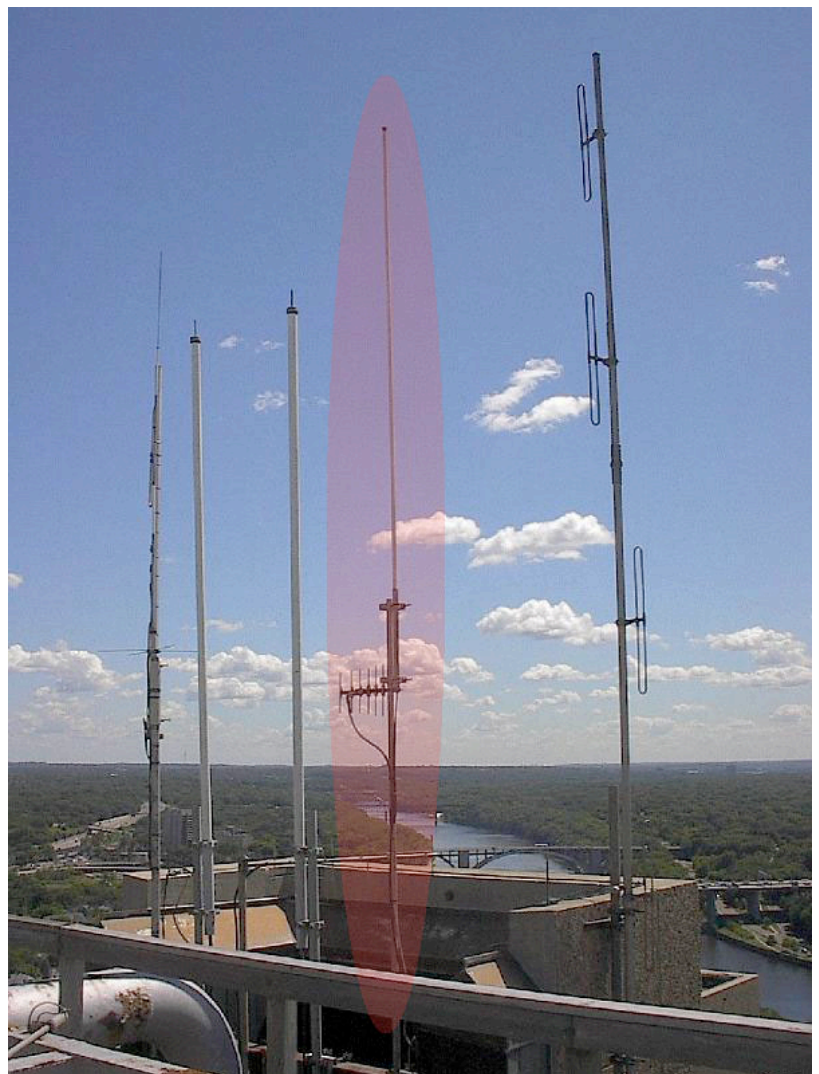
The MAIN 146.850 MHz repeater transmitter is located on one of the City of Oakdale's 180 foot high water tanks located just north of the intersection of Interstate Highways 94, 694 and 494 on the eastern edge of the Twin Cities Metro Area. Our repeater transmit antennas are mounted on the top of this water tank.

The 146.850 MHz transmitter used as the MAIN transmitter at Oakdale, is a solid state 500 watt continuous duty transmitter set at 450 watts of RF output power. It feeds a CELWAVE Super Stationmaster (fiberglass stick) antenna mounted on top of this 180 foot high tank by 200 feet of 7/8" Heliacx cable. Our calculated output power from this transmitter is about 1000 watts ERP (Effective Radiated Power). This transmitter site and equipment provides a solid signal in a 60 mile radius circle of coverage (suitable for mobile and handheld radio operation) from its location about 300 feet above the average terrain in the Twin Cities area.

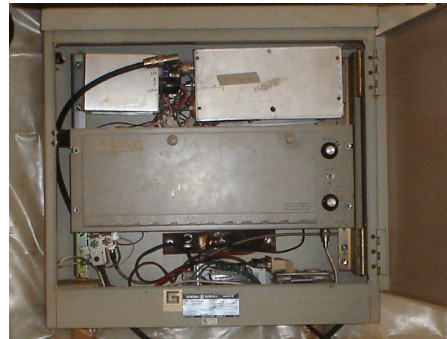
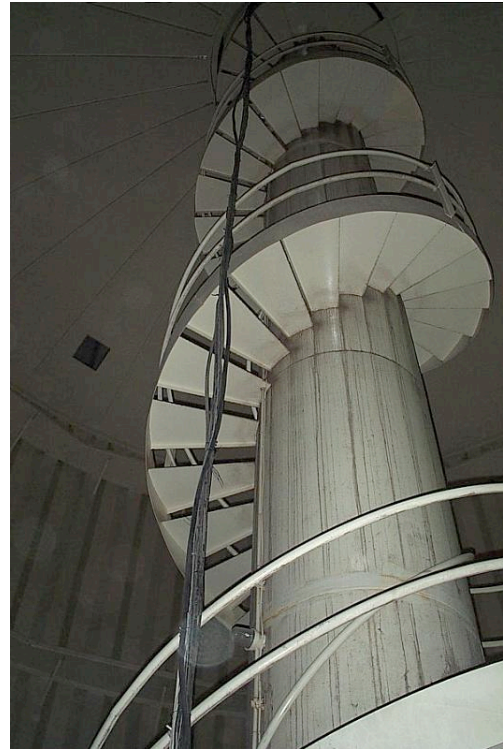
### 146.250 Remote Receiver sites

What makes the 25/85 repeater system operate so well are the multiple receiver sites used to pick up the transmitted signal on 146.250 MHz. Each of these six remote receive sites are linked to the White Bear Lake "Repeater Central." Many of the receive sites share sites with other Amateur Radio or Business Band repeater systems.

The antenna will need to be mounted on top of the South side of water tower #2. The highlighted antenna in the photo is similar to what would be mounted on top of the water tower.



Coax cables will be run down to the “brains” box mounted inside the water tower. One of the other water tower locations looks like this photo, though there are other radio equipment cables in the bundle running down the steps.



The “brains”, otherwise known as the repeater equipment of the system fits into a standard rack cabinet or a 20”x20”x10” wall mountable steel cabinet, depending on the requirements, and similar to this photos.

Any further questions can be directed to Joel Jameson, 763.843.0628 or any of the MARA staff though the web site at <http://www.wd0hwt.net>

Additional informational links for the attached files:

<http://transition.fcc.gov/pshs/techtomics/techtomics13.html>

<http://www.arrl.org/files/file/EMCOMM%20Broch%20for%20viewing.pdf>



# Ham Radio...

*...Getting the message through for your family and community*



*Amateur Radio, often called "ham radio," has consistently been the most reliable means of communications in emergencies when other systems failed or were overloaded.*

### Simply Put—Ham Radio Works!

Most of the time, things work fine. But despite the development of very complex systems—or maybe because they ARE so complex—ham radio has been called into action again and again to provide communications when it really matters.

### Why Ham Radio Works So Well.

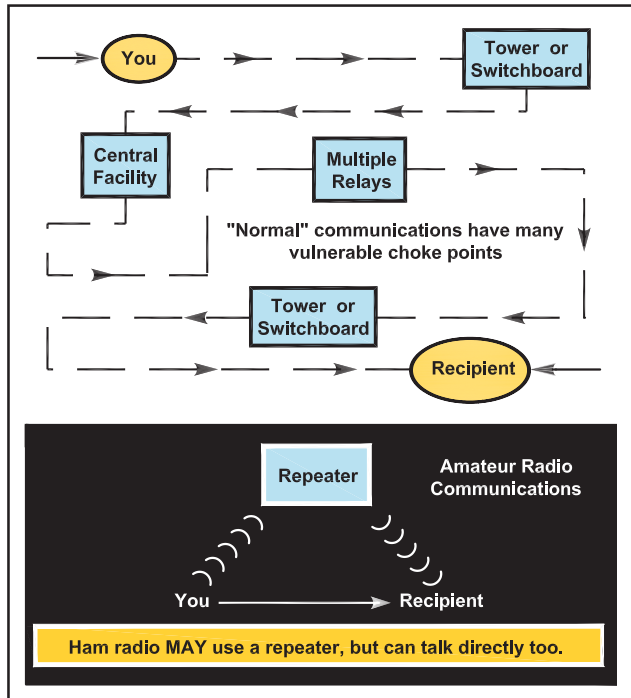
Telephones, cell phones, Internet, trunk lines, satellite phone—to get a message out they all have to go through many vulnerable choke points and need electric power. Even if the system is functioning, these systems can be overwhelmed by the number of cries for help and families seeking information.

### Ham Radio is Different.

While hams MAY use the Internet or a repeater system, they do not HAVE to do so! Hams can "go direct" and talk straight through to each other because each station is fully independent. Hams can operate just fine without other infrastructure. By selecting the right frequencies, hams can talk across town or around the world.

**In an emergency, when your family's lives may be at risk, which communications system would YOU want to have?**

*Hams meet on the air and in person. There are about 630,000 hams in the USA with ham radio clubs and gatherings all over the country.*



*Hams communicate using microphones, telegraph or Morse code keys, computers, TV cameras and even their own satellites.*

### Ham radio operators provided emergency communications during these recent events:

- Earthquake in Hawaii—2006
- Flooding in Northeastern States—2006
- Hurricanes Katrina, Wilma and Rita—2005
- Wildfires in Texas, Oklahoma and New Mexico—2005
- Hurricanes Charley, Frances, Ivan and Jeanne—2004
- Tsunami in Asia—2004
- Earthquake in Central California—2003
- Hurricane Isabel—2003
- Northeast Blackout—2003
- Shuttle Columbia Recovery Effort—2003
- Wildfires in Colorado—2002
- Flooding in Kentucky—2002

- World Trade Center, Pentagon and Western Pennsylvania Terrorist Attacks—2001
- Tropical Storm Allison—2001
- Fires in Los Alamos, New Mexico—2000
- Hurricane Floyd—1999
- Flooding in Texas—1998
- Hurricane Georges—1998
- "500-Year Flood" in N.D. and Minn.—1997
- Western U.S. Floods—1997
- Hurricane Fran—1996
- TWA Plane Crash—1996
- Oklahoma City Bombing—1995

## Hurricanes, Ice, Snow, Tornadoes, Storms and SKYWARN

The National Hurricane Center in Florida relies on its ham radio station, WX4NHC, to receive reports from hams in affected areas ([www.wx4nhc.org](http://www.wx4nhc.org)). The National Weather Service uses ham radio operators for their "SKYWARN" program to get ground level reports of events that are missed by Doppler radar.

Ham radio operators by the hundreds volunteered for service to the devastated areas of the Gulf Coast after Hurricane Katrina and her sisters Rita and Wilma pounded a five state area and destroyed other communications systems. For their life-saving work, the hams received commendations from the President and Congress as well as international praise. It truly proved the saying, "When all else fails, ham radio works!"

Within minutes of the September 11, 2001 terrorist attacks, ham operators communicated from emergency operations centers as other systems failed. The ham operations continued for weeks as the amateurs handled emergency and other important messages for disaster and government agencies as well as for displaced families.

Hams use all sorts of radios and antennas on a wide variety of frequencies to communicate with other hams across town or around the world. They use ham radio for personal enjoyment, for keeping in touch with friends and family, for public service communications and to experiment with radio technology.

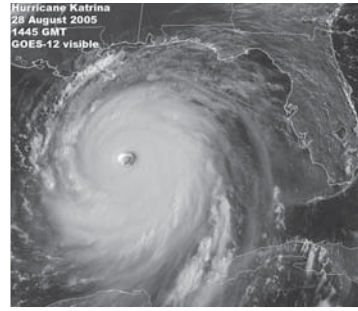
Boaters, RVers and outdoor enthusiasts also use ham radio as an excellent way to maintain communications from wherever they are.

Big station or small and portable, hams enjoy the security of knowing they can get a message through in almost any situation without depending on a fragile infrastructure that can fail or be overloaded.



**FEMA advises that in a crisis you should plan to be totally on your own for at least 3 days —**

**How will YOU communicate?**



*The National Weather Service uses ham operators for its "SKYWARN" program to get ground level reports of events that are missed by Doppler radar.*



### "Amateur"

ám'e-túr - noun

A person who engages in an art, science or other activity purely for the personal interest or self-improvement value of it, rather than a financially compensated profession.

- Amateur athlete
- Amateur astronomer
- Amateur musician

# You Can Have This Capability for Yourself and Your Family—

## Getting Your Own Ham Radio License

Unlike some other types of radio services, you need an FCC license to communicate with a ham radio. There are three levels of Amateur Radio licenses, and getting your first one is not all that hard. Many people pass their FCC exam in a week of spare time study and there are lots of groups and people who will help you.

You can get help from a local club at [www.arrl.org/findaclub](http://www.arrl.org/findaclub).

There is even an online, self-teaching course at [www.arrl.org/cce/courses.html#ec010](http://www.arrl.org/cce/courses.html#ec010).

## Costs

In general, you can expect to spend about \$40 in books and fees to earn your first license. With another \$200 you can purchase your first radio and the gear you will use to get on the air for yourself and start making contacts. Of course good, used equipment is available for less.

## Joining an Emergency Communications Group

To join the Amateur Radio Emergency Service (ARES), you must have a ham radio license. ARES members constantly learn more about emergency operations and practice regularly by providing aid to non-emergency events like parades, marathons and drills.

## ARES

ARES has formal, national agreements to provide emergency communications aid for FEMA, DHS, The American Red Cross, the Salvation Army, and many other response organizations.



**Simply stated, ham radio provides the broadest and most powerful wireless communications capability available to any private citizen anywhere in the world.**

## What is the ARRL?

Founded in 1914, the American Radio Relay League is the 150,000-member national association for Amateur Radio in the USA. Other countries have their own national associations.

ARRL is the primary source of information about what is going on in ham radio. It provides books, news, support and information for individuals and clubs, special events, all sorts of continuing education classes and other benefits for its members.

Amateur or “ham” radio has been around for a century. In that time, it’s grown into a worldwide community of licensed operators using the airwaves with every conceivable means of communications technology. Its practitioners range in age from youngsters to grandparents.

Ham radio attracts those who have never held a microphone as well as the technical expert who grew up with a computer. Even rocket scientists and a rock star or two are in the ham ranks.

Most, however, are just normal folks like you and me who transmit voice, data and pictures through the airwaves, use the Internet, lasers and microwave transmitters, satellites and TV, and even travel to unusual places near and far to make contact.

## Where do I start?

**Go to:**

**[www.emergency-radio.org](http://www.emergency-radio.org)**

You can find more information to get started on the Web site or contact the local group listed below:





# Public Safety and Homeland Security Bureau

FCC > PSHSB > Techtopics > Topic 13: Amateur Radio Service Support to Public Safety Communications

## Topic 13: Amateur Radio Service Support to Public Safety Communications<sup>1</sup>

To this point in our Tech Topics series, our discussions of public safety communications have focused primarily on interoperability and various methods and technologies for public safety organizations to communicate with one another. In times of emergency when normal public safety communications are not available, there are alternative systems that may be used for this purpose. Current FCC rules state that amateur stations and operators are allowed to assist and support public safety communications in times of emergency. This topic addresses the voluntary services provided by amateur operators, amateur service organizations and the relationships between amateur service organizations and public safety jurisdictions. Information about amateur services is also briefly described in the Public Safety and Homeland Security Bureau's Amateur Radio Services web page.<sup>2</sup>

Amateur radio (also known as 'ham radio') services are regulated under Part 97 of the FCC rules.<sup>3</sup> Amateur radio operators are licensed users who operate radio communications as a hobby or a voluntary service running within amateur radio frequencies allocated by the FCC<sup>4</sup>. To acquire an amateur radio license, individuals are required to pass a licensing exam that proves the individual possesses the operational and technical qualifications required to properly perform the duties of an amateur service licensee [47 CFR 97.503]. Currently, individuals may qualify for three classes of operator license: Technician, General and Amateur Extra.

When normal communications systems are not available, amateur stations may make transmissions necessary to provide essential communication needs in connection with the immediate safety of human life and immediate protection of property [47 CFR 97.403]. This provision of emergency communications is regulated by Part 97, Subpart E of the FCC's rules. One advantage for amateur radio operators in public emergency communications is the wide range of available frequencies [47CFR 97.407].<sup>5</sup>

One service within the amateur radio services that uses amateur stations during periods of emergencies is known as the Radio Amateur Civil Emergency Service, or RACES.<sup>6</sup> To transmit in RACES, an amateur station must be certified and registered by a civil defense organization or an FCC-licensed RACES station. RACES is administered by the Federal Emergency Management Agency (FEMA) and acts as a communications group of the government. Registered members of RACES are authorized to respond when a civil defense organization requests amateur radio assistance. Typically these activities occur during periods of local, regional or national civil emergencies such as hurricanes, earthquakes, floods or wildfires. RACES stations may only communicate with specified stations [47CFR 97.407(c), (d)].

It is important to recognize that the amateur radio stations participating in RACES are certified by their local civil defense organizations for this specific purpose. The operators are a valuable resource that provides emergency communication capabilities to their community. Civil defense organizations establish their own training and certification standards. Some localities – for example, Arlington County, Virginia<sup>7</sup> - have more stringent training and certification standards than others. The key component of the RACES program is the direct and recognized affiliation between the amateur radio operators and local authorities since RACES may provide a critical alternative communications link for local officials. For example, RACES operators serve the county by passing critical emergency information from county officials with the County Emergency Response Team (CERT) to RACES operators at other

locations.

Although RACES stations operate in conjunction with a federal, state, tribal or local jurisdiction, there are other options for amateur radio operators in emergency communications to include the Amateur Radio Emergency Service (ARES). Together with the National Traffic System (NTS), these services are broad programs of the American Radio Relay League (ARRL) which is a national association of radio amateur operators. ARES members are licensed amateur radio operators who volunteer to provide emergency communications services to public safety and public service organizations. Most individual ARES units are organized within a city, county or state and usually operate autonomously. The ARRL describes the ARES programs as follows: <sup>8</sup>

"The Amateur Radio Emergency Service (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment for communications duty in the public service when disaster strikes. Every licensed amateur, regardless of membership in ARRL or any other local or national organization, is eligible for membership in ARES. The only qualification, other than possession of an Amateur Radio license, is a sincere desire to serve. Because ARES is an amateur service, only amateurs are eligible for membership. The possession of emergency-powered equipment is desirable, but is not a requirement for membership."

Frequently, individuals interested in providing emergency communications are registered in both ARES and RACES. Dual registration allows continuity of operations if normal amateur operations might otherwise be prohibited.

RACES and ARES are collaborative services although they exist as separate volunteer entities. The ARRL encourages dual enrollment and cooperative efforts between both groups whenever possible. Both organizations remain a vital resource for the public safety community in times of crisis.

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<sup>1</sup> This Tech Topic is coauthored with Mr. William T. Cross from the FCC's Wireless Telecommunications Bureau (WTB). Bill is responsible for all amateur radio related issues and can be reached at 202-418-0682 or email: [william.cross@fcc.gov](mailto:william.cross@fcc.gov). We sincerely appreciate Bill's contributions to this Topic.

<sup>2</sup> See <http://www.fcc.gov/pshs/services/amateur.html>.

<sup>3</sup> See [http://www.access.gpo.gov/nara/cfr/waisidx\\_07/47cfr97\\_07.html](http://www.access.gpo.gov/nara/cfr/waisidx_07/47cfr97_07.html).

<sup>4</sup> See FCC Part 97, Subpart D, Section 97.301 of the Commission's rules, 47 C.F.R. Â§ 97.301.

<sup>5</sup> See the ARRL band plan at <http://www.arrl.org/FandES/field/regulations/bands.html>.

<sup>6</sup> See FCC Part 97, Subpart E, Section 97.407 and <http://www.usraces.org/>.

<sup>7</sup> See the Arlington County RACES web site <http://www.w4ava.org>.

<sup>8</sup> See <http://www.arrl.org/FandES/field/pscm/sec1-ch1.html>

**Public Works Committee**

**5.3.**

**Meeting Date:** 10/18/2011

**By:** Grant Riemer, Engineering/Public Works

**Title:**

Contracted Street Sweeping

**Background:**

At the May 17 PW meeting the conversation was started about contracting out spring street sweeping. Spring sweeping would be the best fit for contracted services because of the urgency involved. Sand and debris from the winter needs to be removed from the streets, as soon as possible, before spring rains can wash it into the storm water system. Spring is also the busiest time for the PW department. Crews are busy repairing winter damage to the ROW, signs knocked down in traffic accidents, localized flooding, potholes and making the transition from winter to spring in general. Three options could be considered if we propose to contract out spring sweeping.

1. Have the contractor supply additional sweepers and work with city staff to perform the task. The most common scenario in this option is the contractor supplies X number of additional sweepers and the city supplies the dump trucks and water truck needed to support the operation. Upside would be sweeping time would be cut dramatically, but the downside is staff and equipment would still be required.

2. Option two would have the contractor perform all aspects of the operation, including hauling the debris and supplying the water truck. The upside would be PW staff would be free to work on other spring time projects. The down side would be expense. Rates for equipment rental were running from \$ 76.00-\$83.00/ hour for pickup broom sweepers and \$80.00/hour for tandem dump trucks in 2011.

3. Option three would be a combination of the first two options. Have the contracted forces sweep our curb/storm-water areas and city staff could sweep the ditched areas. The curbed areas are more time sensitive, while the ditched areas allow for more flexibility.

**Notification:**

**Observations:**

**Funding Source:**

Funding would come from the Storm Water Utility.

**Staff Recommendation:**

Request prices from sweeping contractors for spring 2012 street sweeping. Once bid prices are received, determine to what degree we want to use contractors.

**Committee Action:**

Direct staff to seek RFP's for spring street sweeping 2012

**Form Review**

<b>Inbox</b>	<b>Reviewed By</b>	<b>Date</b>
Brian Olson	Brian Olson	10/13/2011 08:44 AM
Kurt Ulrich	Kurt Ulrich	10/13/2011 03:29 PM
Form Started By: Grant Riemer		Started On: 10/11/2011 11:38 AM

Final Approval Date: 10/13/2011

**Public Works Committee**

**5. 4.**

**Meeting Date:** 10/18/2011

**By:** John Nelson, Engineering/Public Works

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**Title:**

Sanitary Sewer Maintenance Policy

**Background:**

Staff has been informed by the League of Minnesota Cities of a sanitary sewer incentive program. This program will save the city money by lowering our deductible on sanitary sewer backup claims.

**Notification:**

**Observations:**

The League of Minnesota Cities has introduced a Sanitary Sewer Incentive Program for property/casualty members. The program provides cities greater control in the mandatory, out of pocket deductibles they pay for claims and lawsuits related to sanitary sewer backups.

Members that do not meet the LMCIT's criteria by November 15th will see coverage that includes a minimum mandatory deductible of \$1,000 for each sanitary sewer backup. That amount will increase to \$2,500 for each sanitary sewer backup claim November 15, 2011.

The program is meant to reduce the overall cost and frequency of sanitary sewer claims faced by members of the trust. Each year these claims cost 1.5 million in Minnesota. City liability primarily stems from maintenance and inspection issues that lead to sewer backups from line obstructions. The program also will help reduce the extent to which cities with good sanitary sewer operations and maintenance practices end up helping to pay for losses of cities with practices that are not so good.

To avoid the higher mandatory minimum deductible, cities must have:

- A comprehensive map of the sanitary sewer system.
- A documented program of regular inspections and maintenance.
- A documented program for lift station inspections and maintenance.
- An operator properly certified by the Minnesota Pollution Control agency.

**Funding Source:**

No additional funding is required as the policy reflects current operations withing the Sanitary Sewer Utility.

**Staff Recommendation:**

Staff is requesting the PW committee members to approve this sanitary sewer maintenance policy.

**Committee Action:**

Forward to full council for review and approval

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**Attachments**

Sanitary sewer maintenance policy

Manhole inspection form

sanitary sewer service report

lift station inspection form

**Form Review**

<b>Inbox</b>	<b>Reviewed By</b>	<b>Date</b>
Brian Olson	Brian Olson	10/13/2011 08:51 AM
Kurt Ulrich	Kurt Ulrich	10/13/2011 03:37 PM

Form Started By: John Nelson

Started On: 10/12/2011 11:15 AM

Final Approval Date: 10/13/2011

## 1. Purpose

It is the policy of the City of Ramsey to comply with all applicable state and federal regulatory requirements.

The City intends to provide effective and efficient maintenance to its sanitary sewer system by evaluating political, social, safety, and economic concerns, among others. Procedures identified in this policy are intended to maintain the sanitary sewer system to prevent sewer backups. These procedures, when implemented, may also extend the service life of various components of the sanitary sewer system.

The City has 63.5 Miles of public sanitary sewer mains, 1,500 manholes and 7 lift/pump stations within its sanitary sewer system. Procedures identified in this policy are intended to maintain the City's sanitary sewer system to prevent sewer backups and to extend the life of the system. The City has developed and implemented this policy that takes into consideration public safety, the City's budget and personnel, environmental concerns, and the cost of implementation versus the benefit to be achieved. The City will use its employees, equipment and/or private contractors to provide this service.

While the City fully intends to meet the guidelines established in this policy, there may be times when this is not feasible. Issues including, but not limited to, budget constraints, critical equipment failure, or weather and other emergencies may prevent the City from meeting the guidelines established herein. The Public works Director may override provisions established within this policy. Deviations from the goals established in this policy will be documented.

The City will use this policy to guide any sanitary sewer maintenance activities to be provided by a contractor or a party other than the City.

## 2. Routine Maintenance and Inspection Goals

### A. Sanitary Sewer Mains

Scope of City's Responsibility - The City will maintain the components of the public sanitary sewer system. This includes sanitary sewer mains, manholes, lift stations, and other components. Private property owners are responsible for the maintenance of sanitary sewer components from their property up to and including the connection to the public system.

Schedule – The City's goal is to inspect, maintain and clean 1/3 the components of its sanitary sewer system per year.

Equipment – The equipment used to perform maintenance will depend upon the equipment available and its effectiveness as determined by qualified staff.

Television Inspection – The City's sanitary sewer mains will be inspected by television camera 1/10 of the city per year. Any sewer mains located on a street where a street maintenance project is planned will be inspected before and after such a project. Sanitary sewer mains in a new development must be televised before said mains are turned over to the City. Television inspection may also be used to inspect the system where there are possible problems. In addition, the City may require any main near a construction site to be televised before and after the construction (i.e., near blasting, digging, other activities that might disrupt the main, etc.)

Visual recordings of sewer main televising will be required of any vendor performing this service for the City. A written report summarizing and interpreting the findings of the televising will also be required. These records will be kept by the City for a minimum of 12 years.

### B. Problem Areas

The sanitary sewer mains and facilities identified as Category 1 will receive ordinary routine maintenance as noted on sewer maps. The sanitary sewer mains and facilities identified on the sewer map as Category 2 will receive more frequent maintenance and those identified as Category 3 will receive less frequent maintenance. When a sewer main or facility is identified as anything other than Category 1, the reasons why maintenance is needed on a different schedule will be documented. Sewer mains and facilities will receive maintenance according to the attached schedule.

The Utility Supervisor will determine whether a main or facility is Category 1, receiving routine sewer maintenance, Category 2, receiving more frequent maintenance or Category 3, receiving less frequent maintenance. Based on periodic assessment, maintenance will be adjusted and a sewer main may be moved from one category to another.

### C. Sanitary Sewer Lift Stations

The City maintains lift stations using specific maintenance that is reasonable and recommended. The number of lift stations, location, date of installation, and capacity of each lift station is kept on record. Maintenance for each lift station is reflected in Standard

## Operating Procedures (SOP) and Standard Maintenance Procedures (SMP).

Components of SOP and SMP include:

- Easy availability of original manuals with manufacturers' recommended maintenance schedules for all lift station equipment
- Operating procedures for manipulating pump operations (manually or automatically) during wet weather to increase in-line storage of wet weather flows
- Setting wet well operating levels to limit pump start/stops
- Cleaning wet well
- Calibrating flow meters or conducting draw down tests
- Regular rotation of lead, lag, and backup pumps
- Regular inspections of lift station, alarm systems and electrical components
- Maintenance of operation logs and general records for all lift station activities, including inspections
- Clean force mains
- Identify problem areas/components

### 3. Inflow and Infiltration

Inflow and infiltration occur when clear water gets into the sanitary sewer system. This may occur through cracks or leaks in the sewer pipes and manholes or through sump pumps incorrectly connected to the sanitary sewer system. Inflow and infiltration can lead to backups, overflows and unnecessary and expensive treatment of clear water.

City employees will periodically inspect manholes to identify any that contribute to this problem. Sanitary sewer mains will be maintained and inspected pursuant to the City's Sanitary Sewer Maintenance Policy.

### 4. Personnel Responsibilities and Requirements

#### A. Exercise of Professional Judgment

It is expected that City employees, in accordance with their job duties and responsibilities, will exercise their professional judgment in the implementation of this policy. Further, it is expected that in emergency situations (see Emergency Response Policy) City employees will be required to exercise their discretion and weigh political, social, and economic considerations including but not limited to public and employee safety, the potential for damage to private property and the City sanitary sewer system, and environmental concerns.

#### B. Training and Education

The City will provide training to employees responsible for maintenance of and emergency response to issues with the sanitary sewer system. Training of employees will include education necessary to earn and maintain appropriate operator certifications. Training will also address standard operating procedures, proper use of equipment, emergency response and other topics required by state and federal regulatory agencies.

### C. Work Schedule

Full-time City employees in the sanitary sewer department will be expected to work eight-hour shifts. In emergencies, employees may be required to work in excess of eight hours. Budget and safety concerns may limit the length of time an employee is permitted to work.

### D. Weather Conditions

Regular sewer maintenance operations will be conducted only when weather conditions do not endanger the City employees and equipment. Factors that may delay sewer maintenance operations include, but are not limited to: severe cold, severe heat, flooding, rain, snow and other severe weather events.

## 5. Documentation

The City will document all of its inspection and maintenance activities and emergency responses for its sanitary sewer system. The City will also document circumstances that limit its ability to comply with this policy. A report should be prepared periodically for the purpose of evaluating maintenance activities and for determining goals for the future. These records will be kept in accordance with the City's records retention schedule.

## 6. Public Education

Periodically, the City will inform residents of their responsibilities related to sanitary sewer service from the City of Ramsey.

## 7. Other Sanitary Sewer System Policies

The City has a number of other policies and/or ordinances that are important to the ongoing operation of the City's sanitary sewer system. The following documents are available on the City's web site and in the public works department.

**SANITARY SEWER MANHOLES**

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Size: \_\_\_\_\_ By Whom: \_\_\_\_\_

Condition of:

Invert:   G  F  P   Type:   V  P  C   Remarks: \_\_\_\_\_

Floor:   G  F  P   Type:   V  P  C   Remarks: \_\_\_\_\_

Walls:   G  F  P   Type:   B  C   Remarks: \_\_\_\_\_

Casting:   G  F  P   Type: \_\_\_\_\_ Remarks: \_\_\_\_\_

Cover:   G  F  P   Type: \_\_\_\_\_ Remarks: \_\_\_\_\_

Elevation of Manhole to Grade: \_\_\_\_\_

**SANITARY SEWER MANHOLES**

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Size: \_\_\_\_\_ By Whom: \_\_\_\_\_

Condition of:

Invert:   G  F  P   Type:   V  P  C   Remarks: \_\_\_\_\_

Floor:   G  F  P   Type:   V  P  C   Remarks: \_\_\_\_\_

Walls:   G  F  P   Type:   B  C   Remarks: \_\_\_\_\_

Casting:   G  F  P   Type: \_\_\_\_\_ Remarks: \_\_\_\_\_

Cover:   G  F  P   Type: \_\_\_\_\_ Remarks: \_\_\_\_\_

Elevation of Manhole to Grade: \_\_\_\_\_

**SANITARY SEWER MANHOLES**

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Size: \_\_\_\_\_ By Whom: \_\_\_\_\_

Condition of:

Invert:   G  F  P   Type:   V  P  C   Remarks: \_\_\_\_\_

Floor:   G  F  P   Type:   V  P  C   Remarks: \_\_\_\_\_

Walls:   G  F  P   Type:   B  C   Remarks: \_\_\_\_\_

Casting:   G  F  P   Type: \_\_\_\_\_ Remarks: \_\_\_\_\_

Cover:   G  F  P   Type: \_\_\_\_\_ Remarks: \_\_\_\_\_

Elevation of Manhole to Grade: \_\_\_\_\_

**KEY:** G-GOOD F-FAIR P-POOR V-CLAY P-PVC C-CEMENT B-BRICK

# SERVICE REPORT

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ A.M. \_\_\_\_\_ P.M.

OPERATORS: \_\_\_\_\_ REGULAR: \_\_\_\_\_ OVERTIME: \_\_\_\_\_

ADDRESS OF CALL: \_\_\_\_\_

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Sewer Call         | <input type="checkbox"/> Rodding Sewers        | <input type="checkbox"/> T.V.            |
| <input type="checkbox"/> Routine Flushing   | <input type="checkbox"/> Maintenance on Rodder | <input type="checkbox"/> Dying Sewers    |
| <input type="checkbox"/> Proofing Sewers    | <input type="checkbox"/> Manhole Repairs       | <input type="checkbox"/> Checking Sewers |
| <input type="checkbox"/> Maintenance on Jet | <input type="checkbox"/> Sewer Repairs         | <input type="checkbox"/> Other           |

Was our line:  Plugged or  Okay

City sewer flowing normal when you left location?  Yes  No

Amount and type of material removed: \_\_\_\_\_

No. of Set Ups: \_\_\_\_\_  Jet  Rodder

Type of Sewer: \_\_\_\_\_

Size of Sewer: \_\_\_\_\_  Buckets  Steamer

Length of Run: \_\_\_\_\_

Gals. of Water: \_\_\_\_\_  Utilities department Vac-Con  Other

Operator's Remarks or Problems: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Materials Used: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Was homeowner contacted?  Yes  No

Name: \_\_\_\_\_ Homeowner's Remarks: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
Phone: \_\_\_\_\_

Cost: \_\_\_\_\_

## MONTHLY LIFT STATION CHECK LIST

DATE \_\_\_\_\_ SIGNATURE \_\_\_\_\_

SUPERVISORS SIGNATURE \_\_\_\_\_

LIFT STATION#	#1	#2	#3	#4	#5	#6	
CONDITION							
PARTS, NO EXCESSIVE NOISE							
IS FREE OF OBSTRUCTION							
IS THERE BACKUP LIGHT							

### MONTHLY CHECKS

	#1	#2	#3	#4	#5	#6	
ALARMS WITH BATTERY							
ALARMS							
FLOATS							
RELAY SWITCHES FUNCTIONAL Y/N							
WIPE OFF ALL LABELS Y/N							
PROTECTION NETS SECURED Y/N							
GREASER Y/N							
ALL GREASE CLEANED UP LOW OR HIGH							

### LIFT STATION HOURS

	PUMP #1	PUMP #2	TOGETHER
LIFT #1			
LIFT #2			
LIFT #3			
LIFT #4			
LIFT #5			
LIFT #6			
LIFT #7			

REMARKS:

**Public Works Committee**

**5. 5.**

**Meeting Date:** 10/18/2011

**By:** Tim Himmer, Engineering/Public Works

**Title:**

Consider Change Order for City Improvement Project #11-09; Alpine Drive Overlay

**Background:**

The Alpine Drive Overlay project, from Ramsey Boulevard to 153rd Court, was approved by the Public Works Committee at their March 2011 meeting. During discussion it was decided to break the project into two, with phase one occurring in late 2011 and including an edge mill and overlay from Ramsey Boulevard to 153rd Court. Phase two would be delayed until 2012 and include an edge mill and overlay from 153rd Court to Sunfish Lake Boulevard (and the investigation of additional alternative technologies that would prolong the life of the pavement), and a trail along the north side of Alpine Drive that would connect Alpine Park to Ramsey Boulevard and north to the recently completed boardwalk into the SWEETBAY RIDGE subdivision (with funding yet to be determined). This matter was subsequently ratified by the City Council at their first meeting in April, and advanced through the bidding process.

On September 13, 2011 the City Council approved a revised scope for this project, which went from an edge mill and overlay to a full depth reclamation. There were slightly higher costs estimated with this revised approach but the end product was determined to be better, and the City will also be receiving excess class 5 product from the job that can be used on other public works projects throughout the City. Bids were received and a contract awarded on September 27th. During the preconstruction meeting it was discovered that a bid item in the specifications (subgrade preparation) was inadvertently left out of the bid form sheet, therefore a pay item was not included in the original bid from all contractors. None of the contractors bidding on the project brought this to staff's attention during the bidding process. The only way this item would change the outcome of the contractor chosen would be if the second low bidder would perform this work at a slight deduct to their original bid.

**Notification:**

**Observations:**

Staff has reviewed previous projects for costs associated with similar work to perform the required subgrade preparation, and has negotiated a price of \$300 per roadway station. This would equate to a change order of \$12,000 and increase the contract amount from \$363,222.71 to 375,222.71.

**Funding Source:**

Funding for this project is from the City's MSA account.

**Staff Recommendation:**

Staff recommends approval of this change order for subgrade preparation in the amount of \$12,000.

**Committee Action:**

Motion to authorize the proposed change order for subgrade preparation in the amount of \$12,000.

Attachments

Specification Excerpt

Bid Form

Form Review

**Inbox**  
Brian Olson  
Kurt Ulrich

**Reviewed By**  
Brian Olson  
Kurt Ulrich

Form Started By: Tim Himmer

**Date**  
10/13/2011 01:32 PM  
10/13/2011 03:48 PM  
Started On: 10/12/2011 11:24 AM

Final Approval Date: 10/13/2011

## **20. Basis of Payment**

Payment shall be made for the work on the basis specified below. The cost of any additional labor materials, tool and supplies which have not been specifically identified in this section for payment, but required to complete the project as per the plans and specifications shall be considered incidental to the project.

1. *Mobilization* – Payment shall be made on a lump sum basis for the mobilization of equipment.
2. *Remove Concrete Curb and Gutter* – Payment will be made on a per lineal foot basis as compensation for all equipment, material, and labor costs required for the removal and disposal of concrete curb and gutter..
3. *Remove Concrete Storm Sewer* – Payment will be made on a per lineal foot basis as compensation for all equipment, material, and labor costs required for the removal and disposal of concrete storm sewer pipe.
4. *Remove Bituminous Pavement* – Payment will be made on a per square yard basis as compensation for all equipment, material, and labor costs required for the removal and disposal of bituminous pavement.
5. *Remove Concrete Pavement* – Payment will be made on a per square feet basis as compensation for all equipment, material, and labor costs required for the removal and disposal of concrete pavement.
6. *Remove Storm Manhole* – Payment will be made on a per each basis as compensation for all equipment, material, and labor costs required for the removal and disposal of the storm sewer structures.
7. *Saw cutting Pavement* – Payment will be made on a per lineal foot basis as compensation for all equipment, material, and labor costs required to saw cut pavement per class of material as marked in the field.
8. *Select Topsoil Borrow* – Payment will be made on a per cubic yard basis as compensation for all equipment, material, and labor costs required to furnish and install topsoil meeting the MNDOT 3877 Topsoil Borrow specification on all disturbed areas.
9. *Salvage Aggregate and Export Excess* – Payment will be made on a per cubic yard basis as compensation for all equipment, material, and labor costs required to export excess aggregate material to City Public Works Facility.
10. **Subgrade Preparation** - Payment will be made on a per road station basis as compensation for all equipment, material, and labor costs required to shape and compact subgrade to prior top placement of bituminous surfacing.
11. *Furnish and Install Class 5 Aggregate Base* – Payment will be made on a per ton basis as compensation for all equipment, material, and labor costs required for the transportation, placement, and compaction of the Class 5 aggregate base meeting the Ramsey gradation requirements. Thickness shall be per plan for each designated area.
12. *Reclaim Bituminous Surface* – Payment will be made on a per square yard basis as compensation for all equipment, material, and labor costs required for full depth milling of existing bituminous surface and underlying aggregate.

Bid Proposal

NO.	ITEM	UNIT	QTY	PRICE	EXTENSION
1	MOBILIZATION	LS	1		
2	REMOVE CONCRETE CURB AND GUTTER	LF	1,150		
3	REMOVE 12 - 18 INCH RCP	LF	146		
4	REMOVE CONCRETE CROSS GUTTER	SQ YD	30		
5	REMOVE 2 X 3 CATCHBASIN	EACH	2		
6	REMOVE 48" STORM MANHOLE	EACH	3		
7	SAWING BITUMINOUS PAVEMENT	LIN FT	264		
8	SELECT TOPSOIL BORROW (6" DEPTH)	CY	65		
9	SALVAGE AGGREGATE AND EXPORT FROM SITE	CY	1,000		
10	4" AGGREGATE BASE, CLASS 5	TON	280		
11	MILL BITUMINOUS SURFACE FULL DEPTH, FULL WIDTH	SQ YD	17,600		
12	BITUMINOUS MATERIAL FOR TACK COAT	GAL	881		
13	1.5" WEARING COURSE SPWEA340B	TON	1,599		
14	2" NON-WEARING COURSE SPNWB330B	TON	2,132		
15	CONSTRUCT RC PIPE APRON 15 INCH	EACH	1		
16	CONSTRUCT RC PIPE APRON 18 INCH	EACH	2		
17	15" RC PIPE SEWER, DESIGN 3006	LIN FT	238		
18	18" RC PIPE SEWER, DESIGN 3006	LIN FT	1,200		
19	CONSTRUCT 2' x 3' STORM CATCH BASIN	EACH	4		
20	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	EACH	11		
21	F&I CASTING ASSEMBLY (STORM)	EACH	15		
22	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	1,150		
23	6" CONCRETE CROSS GUTTER	SQ YD	30		
24	TRAFFIC CONTROL	LS	1		
25	SILT FENCE, HEAVY DUTY	LF	500		
26	INLET PROTECTION	EACH	5		
27	SEEDING	SY	350		
28	SEED, TYPE 270	LBS	14		
29	MULCH MATERIAL, TYPE 1	TON	0		
30	DISK ANCHORING	ACRE	0		
31	EROSION CONTROL BLANKET, CATEGORY 2	SY	500		
32	FERTILIZER, TYPE 20-0-10	LBS	21		
33	4" DOUBLE YELLOW LINE - EPOXY	LIN FT	6,165		
34	4" SOLID LINE WHITE - EPOXY	LIN FT	12,340		
35	24" SOLID LINE WHITE STOP BARS - EPOXY	LIN FT	26		
36	CROSS WALK - EPOXY	SY FT	120		
Total 1-36					

Written Amount

**Public Works Committee**

**5. 6.**

**Meeting Date:** 10/18/2011

**By:** Len Linton, Engineering/Public Works

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**Title:**

Consider Guard Rail Enhancements for the Parking Ramp

**Background:**

The parking ramp has been open for several years. The exterior railings for all floors were designed to be functional and also appear as architectural elements. The north, east and south railings on the top floor are a mixture of concrete and concrete topped with metal fence. The top of the metal fence is 9 feet above the floor with the top of the concrete at the fence 66 inches above the floor. The lower concrete rails are 43 inches high.

The railing on the north, east and south sides of the 2nd and 3rd floors are concrete to 30 inches with metal railings on top making the total height 43 inches. The west railings on all floors are cables to allow for the expansion that is under construction. There are Plexiglas panels in metal frames that stretch from railing to ceiling in the north east corner of the ramp adjacent to the stairs.

The interior edges of the floors and ramps between floors have chain link fence over cables cast into the support columns. The top of the chain link fence is 43 inches above the floor. There is an 18" gap between the horizontal fence at the edge of the floor and the sloping fence at the edge of the ramps.

The heights of the railings and fences meet the current safety standards.

The parking ramp expansion is currently under construction.

**Notification:**

**Observations:**

A concern was raised that the lower height railings may not prevent a bicycle rider striking the barrier from going over the top of the railing. A proposal was requested from LSA Design, Inc. for designing changes to three specific areas on the ramp:

Enclose all exterior openings on floors 2 and 3 and raise the guard rail height at specific locations on the top floor.

Enclose openings between the floors at sloped ramp on all floors.

Provide sunscreen protection on east side of parking ramp at middle bay.

A proposal was submitted with 2 options:

1. Design all enhancements. Fee \$5,500 plus reimbursable expenses
2. Design limited enhancements. Fee \$3,900 plus reimbursable expenses.

The work would be processed as a change order to the current construction project and is estimated between \$100,000 and \$200,000 depending on the level of improvements selected.

**Funding Source:**

To be determined

**Staff Recommendation:**

Based on discussion.

**Committee Action:**

Based on discussion.

---

## Attachments

Proposal

Top Floor

Top Floor East

2nd -3rd Floor

Internal

Walkway

## Form Review

<b>Inbox</b>	<b>Reviewed By</b>	<b>Date</b>
Brian Olson	Brian Olson	10/13/2011 08:53 AM
Kurt Ulrich	Kurt Ulrich	10/13/2011 03:49 PM

Form Started By: Len Linton  
Started On: 10/12/2011 03:03 PM  
Final Approval Date: 10/13/2011



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www.lsadesigninc.com

Planning  
Architecture  
Urban Design

# Proposal

**To:** Brian Olson, Dir. Of Public Works  
**From:** James B. Lasher  
**Project:** Ramsey Municipal Parking Facility Skyway Addition  
**Subject:** Scope of Work and Fee Proposal for:  
Guardrail Enhancements at the Parking Deck  
**Date:** August 26, 2011

On August 25, 2011 we toured the Ramsey Municipal Parking Facility to review enhancements that the City would like to make to selected areas of the deck. There are basically three areas of work:

- Enclose all openings along the exterior openings on floors 2 and 3 and raise guardrail height on top floor at selected areas
- Enclose openings between floors at sloped ramp on all floors
- Provide sun screen protection on east side of parking deck at middle bay.

Based on our initial review of this work, we estimate that this Change Order will be between \$100,000 and \$200,000 depending on the level of improvement and design solutions.

The following is a series of Options on how to approach this issue and the fee's required for each.

## Option 1 – All Enhancements:

1. LSA will prepare two concepts to provide full enclosure at ALL openings within the parking deck on floors two and three, including sun screen areas at center-bay.
2. LSA will prepare two concepts to provide ornamental fencing on the top floor of the deck at areas identified around the corners of the structure.
3. LSA will prepare two concepts to enclose or limit access to the openings between floors along the center bays of the deck.
4. LSA will present concepts to city staff and work towards an agreeable Preferred Alternative.
5. LSA will prepare sufficient details drawings to describe the work and submit as a Request for Proposals to Knutson Construction for pricing.
6. LSA will review the quoted price with city staff and, if acceptable, prepare a Change Order for the work.
7. LSA will submit the Change Order to the City and MnDOT for review and approval. LSA will attend one City Council meeting to present the Change Order for consideration.
8. LSA will review shop drawings and observe the work as part of the CA phase of the Parking Deck project.

Option 1 Fee: \$5,500 plus normal Reimbursable Expenses  
Schedule: 3 to 5 weeks for Plans and Approvals

Option 2 – Limited Enhancements

1. LSA will prepare two concepts to provide ornamental fence only at areas identified on the top floor of the parking deck, including sun screen areas at center bay.
2. LSA will prepare two concepts to provide additional height to the existing pipe guardrails on floors two and three around the entire perimeter of the deck. (Note: This will not provide full enclosure for the openings. We anticipate this design will add up to 16” in height to the existing pipe guard rails.)
3. LSA will prepare one concept to enclose or limit access to the openings between floors along the center bays of the deck.
4. LSA will present concepts to city staff and work towards an agreeable Preferred Alternative.
5. LSA will prepare sufficient details drawings to describe the work and submit as a Request for Proposals to Knutson Construction for pricing.
6. LSA will review the quoted price with city staff and, if acceptable, prepare a Change Order for the work.
7. LSA will submit the Change Order to the City and MnDOT for review and approval. LSA will attend one City Council meeting to present the Change Order for consideration.
8. LSA will review shop drawings and observe the work as part of the CA phase of the Parking Deck project.

Option 2: \$3,900 plus normal reimbursable expenses.  
Schedule: 3-5 weeks for Plans and Approval

Please contact me with any further questions or comments.

C: William Fossing – LSA Design  
File











**Public Works Committee**

**6. 1.**

**Meeting Date:** 10/18/2011

**By:** MaryJo Warner, Engineering/Public Works

---

**Title:**

Update on Resident Concern at 5220 156th Lane NW

**Background:**

Attached is documentation for Committee review and information.

**Notification:**

**Observations:**

**Funding Source:**

n/a

**Staff Recommendation:**

**Committee Action:**

No formal action necessary - for review and informational purposes only.

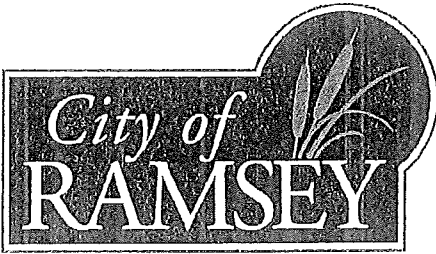
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**Attachments**

**Staff Input Attachments 10.18.11**

**Form Review**

<b>Inbox</b>	<b>Reviewed By</b>	<b>Date</b>
Brian Olson	Brian Olson	10/13/2011 08:51 AM
Kurt Ulrich	Kurt Ulrich	10/13/2011 03:51 PM
Form Started By: MaryJo Warner		Started On: 10/12/2011 03:15 PM
Final Approval Date: 10/13/2011		



7550 Sunwood Drive NW • Ramsey, Minnesota 55303  
City Hall: 763-427-1410 • Fax: 763-427-5543  
www.ci.ramsey.mn.us

October 11, 2011

Jason and Ruth Obermaier  
5220 156<sup>th</sup> Lane NW  
Ramsey, MN 55303

Re: Letter of Understanding - Septic Replacement

Dear Mr. and Mrs. Obermaier,

As previously discussed with you, this letter outlines our agreement related to the relocation of the sanitary septic system on your property located at 5220 156<sup>th</sup> Lane NW. The City of Ramsey will be preparing the final design and construction documents for you so that you may administer the project and contract directly with a contractor of your choice. This project entails the following:

- Relocation of the existing septic drain field.
- Tree removal as necessary to complete the project.
- Relocation of existing shrubs, as shown on the design, to the west property line to provide screening.
- Grading work to fill the depression at the rear of your property to alleviate the drainage concerns in that area.
- Relocation and/or repair of your existing irrigation system to facilitate this project.
- Final turf establishment in all areas disturbed by the construction activities.

The City will be responsible for the technical inspections and oversight during installation of the septic facilities, and will bear the cost of all these improvements. You will be required to administer the items related to final grading and turf establishment directly with the contractor, such that it meets your satisfaction. Following completion and acceptance the City will have no further obligation related to this matter.

Attached to this letter is the septic design, which has been prepared by Landform Engineering and is the basis for the work related to this project. By signing this letter you acknowledge the facts and obligations stated above, and agree that there will be no further recourse against the City as it relates to this work. Please feel free to contact me directly if you have any questions or concerns related to this matter, and thank you for your patience and cooperation through this process.

Sincerely,

Brian Olson, PE  
Public Works Director/Principal City Engineer

---

Jason Obermaier

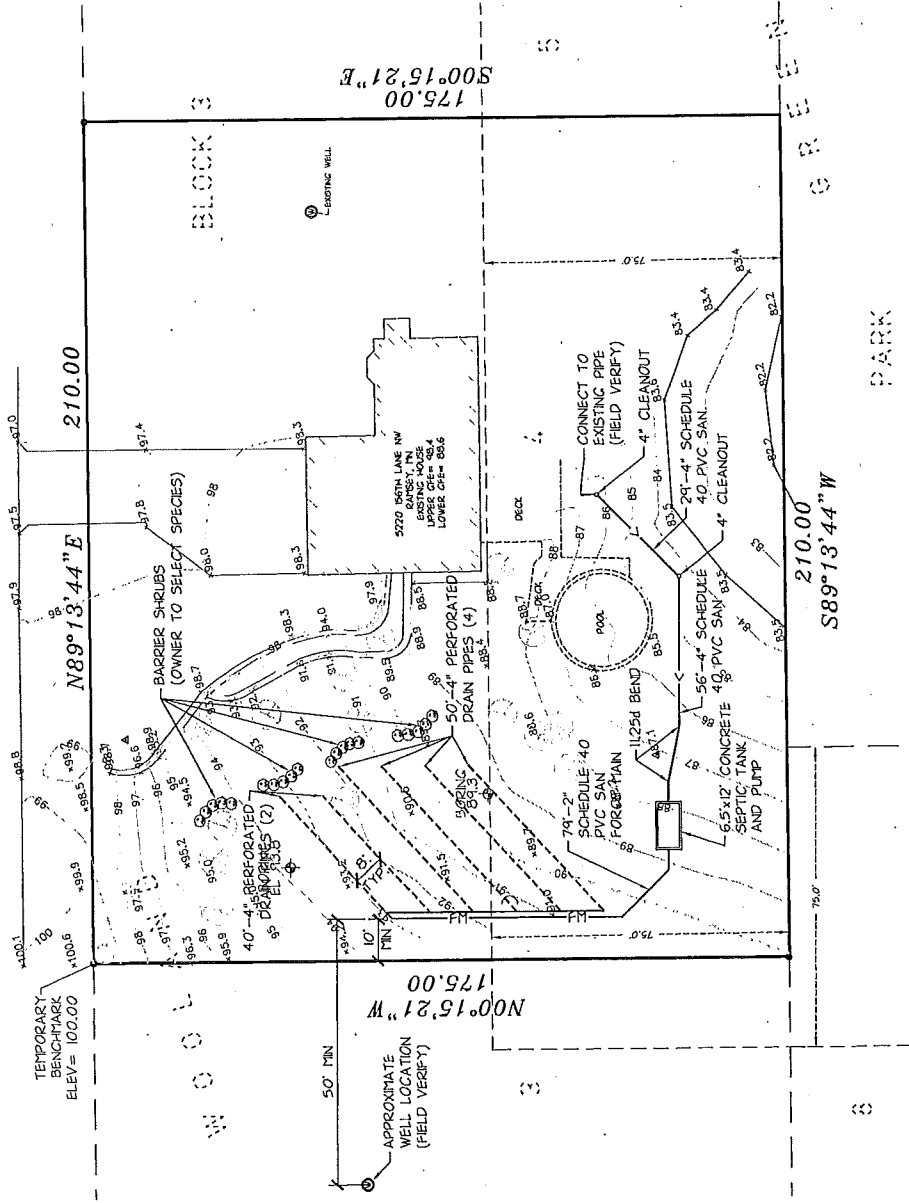
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Ruth Obermaier

# SEPTIC LAYOUT

FOR: LOT 4, BLOCK 3, WOODLAND GREEN, ANOKA COUNTY, MN

155TH LANE NW



## NOTES

1. BACKGROUND INFORMATION SHOWN PER FIELD SURVEY PERFORMED BY LANDFORM ON SEPTEMBER 30, 2011 EXPRESSLY FOR THIS PROJECT.
2. FOR THE PURPOSES OF THIS SURVEY THE NORTH LINE OF LOT 4, BLOCK 3, WOODLAND GREEN IS ASSUMED TO BEAR SOUTH 89 DEGREES 13 MINUTES 44 SECONDS EAST, ACCORDING TO THE RECORDED PLAT THEREOF.
3. THE NORTHWEST CORNER OF SAD LOT IS ASSUMED TO HAVE AN ELEVATION OF 100.00.
4. THIS SURVEY HAS BEEN PERFORMED WITHOUT THE BENEFIT OF A DEED OR TITLE COMMITMENT. EASEMENTS OF RECORD HAVE NOT BEEN RESEARCHED.

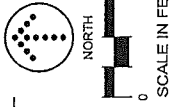
## SITE SYMBOLS

EXISTING	DESCRIPTION
	BUILDING CANOPY / OVERHANG
	CONTOUR
	SPOT ELEVATION
	SOIL BORING
	TREES
	WELL

105 South Fifth Avenue  
Suite 513  
Minneapolis, MN 55401  
Web: landform.net

From Site to Finish  
L A N D F O R M

Job No. R4111010 Drawing: CNFR411010 By: MJ

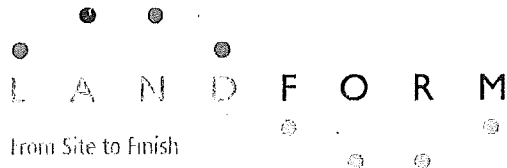


**City of Ramsey**

**5220 156<sup>th</sup> Lane NW  
Ramsey, MN**

**SEPTIC DESIGN**

**10/3/11**



L A N D F O R M

From Site to Finish

105 South Fifth Avenue  
Suite 513  
Minneapolis, MN 55401

Tel: 612-252-9070  
Fax: 612-252-9077  
www.landform.net

10/4311

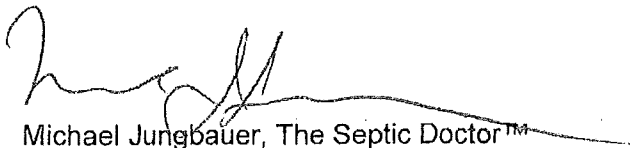
5220 156<sup>th</sup> Lane NW  
Ramsey, Mn,

Thank you for asking us to provide a septic design for your project in Ramsey. We have successfully completed projects of similar nature in the past and have the expertise to meet and exceed your expectations for this project.

We have estimated/designed a new, standard septic system (Type 1) for a 4-bedroom house. The details of this system are outlined within the project scope as follows.

- Design is to replace flooded trenches in rear lower yard.  
Existing system is non compliant due to lack of vertical separation.
- Pump and reuse existing compliant 1250 gallon septic tank..
- Install 1500 gallon reverse flow tank use 1000 gallon end for lift tank with pump and indoor alarm. Install in lower west end of yard below pool elevation. This may require a water proofed tank and dewatering.
- Use dropbox distribution of effluent. Pump to highest dropbox.
- Use schedule 40 piping throughout pressure distribution system.  
Verify all well and property line setbacks.
- As part of the scope of this project and to ensure quality control, we will divert water from system's surroundings on final grade, rope off the new septic site, keep all construction traffic off of the site before and after construction.

Sincerely,  
Landform



Michael Jungbauer, The Septic Doctor™  
MPCA License No. L3227

# Soil Boring Log

UNIVERSITY OF MINNESOTA  
ON-SITE  
SEWAGE  
TREATMENT  
PROGRAM



Date 9/30/2011

Time 4:30pm

Client/ Address: 5220 156th Lane NW

Back/ Side Slope

Legal Description/ GPS Boring 1

lawn grasses

Soil parent materials (Check all that apply)  Outwash  Lacustrine  Loess  Till  Alluvium  Bedrock  Organic

Vegetation

Soil survey map units

Slope %

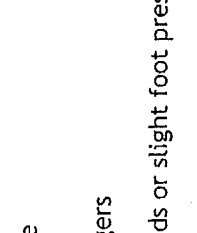
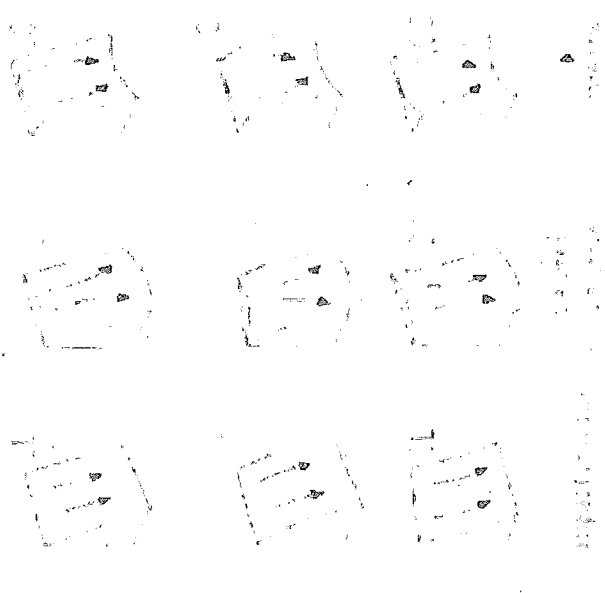
6

Slope shape Convex, Concave

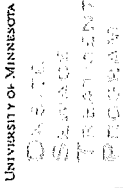
Structure-----I

Depth (in)	Texture	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Shape	Grade	Consistence
0-6"	fine loamy sand	10yr2/2				Granular	Structureless	Loose
6-12"	medium loamy sand	10yr3/2				Single grain	Structureless	Loose
12-36"	medium loamy sand	10yr3/3				Single grain	Structureless	Loose
36-72"	medium loamy sand	10yr4/4				Single grain	Structureless	Loose
72-84"	medium loamy sand	10yr5/4				Single grain	Structureless	Loose

Comments

Textures:	Subsoil Indicator(s) of Saturation:	Landscape Position:
c-clay sic-silty clay sc-sandy clay ct-clay loam sicl-silty clay loam scl-sandy clay loam si-silt sil-silt loam l-loam sl-sandy loam* ls-loamy sand* s-sand*	S1. Distinct gray or red redox features S2. Depleted matrix (value >/=4 and chroma </=2) S3. 5Y chroma </= 3 S4. 7.5 YR or redder faint redox concentrations or redox depletions If yes to one of the above indicators then: <b>Topsoil Indicator(s) of Saturation:</b> T1. Wetland Vegetation T2. Depressional Landscape T3. Organic texture or organic modifiers T4. N 2.5/ 0 color T5. Redox features in topsoil T6. Hydrolic indicators	 <p>Summit Shoulder Back Side Foot Slope Toe Slope</p>
<b>Soil Structure</b> <b>Grade:</b> <u>Weak-</u> <u>Moderate-</u> <u>Strong-</u> <u>Loose-</u>	Poorly formed, indistinct peds, barely observable in place Well formed, distinct peds, moderately durable and evident, but not distinct in undisturbed soil Durable peds that are quite evident in un-displaced soil, adhere weakly to one another, withstand displacement, and become separated when soil is disturbed No peds, sandy soil	Intact specimen not available Slight force between fingers Moderate force between fingers Moderate force between hands or slight foot pressure Foot pressure <b>Slope Shape:</b> Slope shape is described in two directions: up and down slope (perpendicular to the contour), and across slope (along the horizontal contour); e.g. Linear, Convex or LV.
<b>Soil Structure</b> <b>Shape:</b> <u>Granular-</u> <u>Platy-</u> <u>Blocky-</u> <u>Prismatic-</u> <u>Single Grain-</u> <u>Massive-</u>	The peds are approximately spherical or polyhedral and are commonly found in topsoil. These are the small, rounded peds that hang onto roots when soil is turned over. Platy structure is commonly found in forested areas just below the leaf litter or shallow topsoil. The peds are block-like or polyhedral, and are bounded by flat or slightly rounded surface that are casting of the faces of surrounding peds. Blocky structure is commonly found in the lower topsoil and subsoil. Flat or slightly rounded vertical faces bound the individual peds. Peds are distinctly longer vertically, and faces are typically cast or molds of adjoining peds. Prismatic structure is commonly found in the lower subsoil. The structure found in a sandy soil. The individual particles are not held together. No observable aggregates, or no orderly arrangement of natural lines of weakness.	

# Soil Boring Log



Client/ Address: 5220 156th Lane NW

Legal Description/ GPS Boring 2

Soil parent materials  Outwash  Lacustrine  Loess  
 (Check all that apply)  Till  Alluvium  Bedrock  Organic

Landscaping position

Vegetation

Date 9/30/2011

Time 4:30pm

Back/ Side Slope

lawn grasses

Slope % 6

Slope shape Convex, Concave

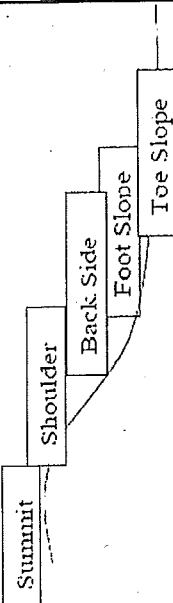
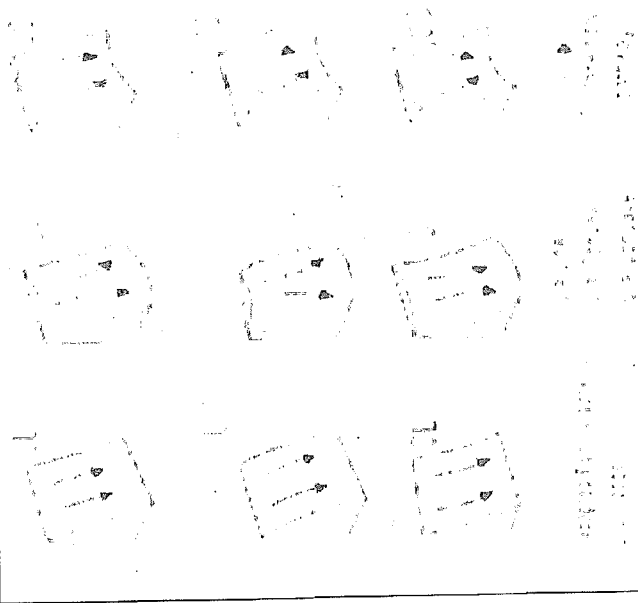
Soil survey map units

NyC

Structure-----I

Depth (in)	Texture	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Shape	Grade	Consistence
0-6"	fine loamy sand	10yr2/1				Granular	Structureless	Loose
6-14"	medium loamy sand	10yr2/2				Single grain	Structureless	Loose
14-48"	medium loamy sand	10yr3/2				Single grain	Structureless	Loose
48-60"	medium loamy sand	10yr4/4				Single grain	Structureless	Loose
60-84"	medium loamy sand	10yr5/4				Single grain	Structureless	Loose

Comments

<p><b>Textures:</b></p> <p>c-clay</p> <p>sic-silty clay</p> <p>sc-sandy clay</p> <p>cl-clay loam</p> <p>sicl-silty clay loam</p> <p>scl-sandy clay loam</p> <p>si-silt</p> <p>sil-silt loam</p> <p>l-loam</p> <p>sl-sandy loam*</p> <p>ls-loamy sand*</p> <p>s-sand*</p>	<p><b>Subsoil Indicator(s) of Saturation:</b></p> <p>S1. Distinct gray or red redox features</p> <p>S2. Depleted matrix (value &gt;/=4 and chroma &lt;/=2)</p> <p>S3. 5Y chroma &lt;/= 3</p> <p>S4. 7.5 YR or redder faint redox concentrations or redox depletions</p> <p>If yes to one of the above indicators then:</p> <p><b>Topsoil Indicator(s) of Saturation:</b></p> <p>T1. Wetland Vegetation</p> <p>T2. Depressional Landscape</p> <p>T3. Organic texture or organic modifiers</p> <p>T4. N 2.5/ 0 color</p> <p>T5. Redox features in topsoil</p> <p>T6. Hydraulic indicators</p>	<p><b>Landscape Position:</b></p> 
<p><b>Soil Structure</b></p> <p><b>Grade:</b></p> <p><u>Weak-</u></p> <p><u>Moderate-</u></p> <p><u>Strong-</u></p> <p><u>Loose-</u></p> <p><b>Soil Structure</b></p> <p><b>Shape:</b></p> <p><u>Granular-</u></p> <p><u>Platy-</u></p> <p><u>Blocky-</u></p> <p><u>Prismatic-</u></p> <p><u>Single Grain-</u></p> <p><u>Massive-</u></p>	<p><b>Consistence:</b></p> <p><u>Loose-</u></p> <p><u>Friable-</u></p> <p><u>Firm-</u></p> <p><u>Extremely firm-</u></p> <p><u>Rigid-</u></p> <p>Poorly formed, indistinct peds, barely observable in place</p> <p>Well formed, distinct peds, moderately durable and evident, but not distinct in undisturbed soil</p> <p>Durable peds that are quite evident in un-displaced soil, adhere weakly to one another, withstand displacement, and become separated when soil is disturbed</p> <p>No peds, sandy soil</p> <p>The peds are approximately spherical or polyhedral and are commonly found in topsoil. These are the small, rounded peds that hang onto roots when soil is turned over.</p> <p>Platy structure is commonly found in forested areas just below the leaf litter or shallow topsoil.</p> <p>The peds are block-like or polyhedral, and are bounded by flat or slightly rounded surface that are casting of the faces of surrounding peds. Blocky structure is commonly found in the lower topsoil and subsoil.</p> <p>Flat or slightly rounded vertical faces bound the individual peds. Peds are distinctly longer vertically, and faces are typically cast or molds of adjoining peds. Prismatic structure is commonly found in the lower subsoil.</p> <p>The structure found in a sandy soil. The individual particles are not held together.</p> <p>No observable aggregates, or no orderly arrangement of natural lines of weakness.</p>	<p>Intact specimen not available</p> <p>Slight force between fingers</p> <p>Moderate force between fingers</p> <p>Moderate force between hands or slight foot pressure</p> <p>Foot pressure</p> <p><b>Slope Shape:</b></p> <p>Slope shape is described in two directions: up and down slope (perpendicular to the contour), and across slope (along the horizontal contour); e.g. Linear, Convex or LV.</p> 

# Design Flow and Soil Worksheet



## 1. AVERAGE DESIGN FLOW:

A. Estimated Flow (GPD):

or Measured Flow (GPD): (flow times safety factor)  gpd X  =  gpd

Design Flow:  Gallons Per Day (GPD)

B. Septic Tank capacity:  Gallons

Number of Septic Tanks or Compartments:

Effluent Screen & Alarm?

\* Note: If a garbage disposal unit or other appliance with garbage grinding abilities (i.e. dishwashers) is anticipated or installed, or if sewage is pumped to the septic tank, the septic tank capacity must be increased by 50% and multiple tanks or compartments must be used, plus an effluent screen with an alarm.

Number of Bedrooms	Classification of Dwelling			
	I	II	III	IV
2 or less	300	225	180	*
3	450	300	218	*
4	600	375	256	*
5	750	450	294	*
6	900	525	332	*

Number of Bedrooms	Septic Tank Liquid Minimum Capacities (Gallons)	Capacity with Garbage Disposal and/or Sewage Pumped to Tank*
3 or less	1,000	1,500
4 or 5	1,500	2,250
6 or 7	2,000	3,000
8 or 9	2,500	3,750

\* Flows for Classification IV dwellings are 60 percent of the values as determined for Classification I, II or III systems.

## 2. SITE EVALUATION:

A. Depth to Limiting Layer:  inches  ft

B. Maximum Depth of system:  inches  ft  
(a negative number means a mound system is required)

C. Type of Soil Treatment and Dispersal Area:

D. Type of Distribution:

E. Landscape Position:

F. Soil Texture Group Number:  Rise  Run

G. Percent Land Slope:  % Slope =  ÷  x 100 =

Treatment Levels of BOD	BOD (mg/L)
Level C	125
Level B	25
Level A	15

## 3. SOIL LOADING RATES: Use either A. or B. below

A. 7080 Table IX  
DETAILED SOIL DESCRIPTIONS (SOIL PIT REQUIRED)

Texture:

Texture Group:

Structure:

Grade:

Consistence:

Select Soil Loading Rate:

B. 7080 Table IXa

PERCOLATION TEST SIZING	LOADING RATE (GPD/ft <sup>2</sup> )
Faster than 0.1"	0.00
0.1 to 5"	1.20
0.1 to 5 (soil texture groups 3 & 5)	0.60
6 to 15	0.78
16 to 30	0.60
31 to 45	0.50
46 to 60	0.45
61-120	0.24
Slower than 120	0.00

\*Rapidly permeable soils: see 7080.2260

Slowest measured percolation rate:

Select Soil Loading Rate:

Soil Texture	Group #
Coarse Sand	1
Medium Sand	2
Fine Sand	3
Coarse Loamy Sand	4
Medium Loamy Sand	4
Fine Loamy Sand	5
Very Fine Loamy Sand	5
Coarse Sandy Loam	6
Medium Sandy Loam	6
Fine Sandy Loam	7
Very Fine Sandy Loam	7
Loam	8
Silt Loam	9
Clay Loam	10
Silty Clay Loam	10
Sandy Clay Loam	10
Silty Clay	11
Sandy Clay	11
Clay	11

C. Design Loading Rate:

## 4. ORGANIC LOADING (if pretreatment is being used)

Organic Loading = Design Flow X Estimated BOD in mg/L in the effluent X 8.35 ÷ 1,000,000 (See Table III)

gpd X  mg/L X 8.35 ÷ 1,000,000 =  lbs BOD

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

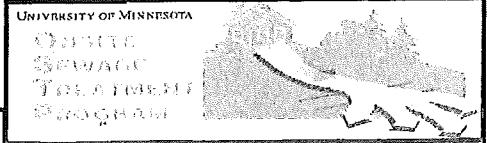
Michael J Jungbauer  
(Designer)

(Signature)

L3227  
(License #)

10/3/2011  
(Date)

# Trench & Bed Design Worksheet

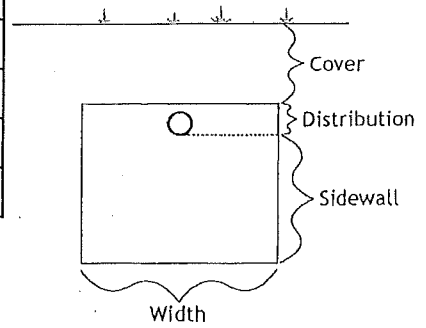


## 1. SYSTEM SIZING:

- A. Design Flow:  GPD      B. Maximum Depth:  inches
- C. Loading Rate:  ft<sup>2</sup>/GPD
- D. Required Bottom Area: Design Flow (1.A) ÷ Loading Rate (1.C) = Required Bottom Area  
 ÷  =  ft<sup>2</sup>
- E. Select Dispersal Media:     Rock       Chambers       Gravelless Pipe  
 Other Approved Media
- F. Select Distribution Method:     Pressure (required for rapidly permeable soils)  
 Gravity-Drop Box  
 Gravity-Other
- G. Select Dispersal Type:     Trench       Bed (<6% Slope)

## 2. TRENCH CONFIGURATION:

A.	Required trench bottom area (ft <sup>2</sup> ): (from 4A)	Sidewall Absorption (inches)	Bottom Area Reduction	Bottom Area Multiplier	Reduced trench bottom area
	1000	6 to 11	0%	1	1000
		12 to 17	20%	0.8	800
		18 to 23	34%	0.66	660
		24	40%	0.6	600



- B. Select Sidewall Height:  inches =  ft
- C. Required Bottom Area:  ft<sup>2</sup>
- D. Select Trench Width:  ft
- E. Total Required Trench Length: Bottom Area (2.C) ÷ Trench Width (2.D) = Total Required Trench Length  
 ft<sup>2</sup> ÷  =  ft
- F. Select Trench Spacing:  ft (typically 5 - 12 ft)
- G. Calculate Lawn Area: Trench Length (2.E) X Trench Spacing (2.F) = ft<sup>2</sup> lawn area  
 X  =  ft<sup>2</sup> lawn area
- H. If using rock or substitute, select Depth Required to Cover Distribution Pipe:  
 ft (0.33 for pressure, 0.5 for gravity)
- I. Calculate Rock Volume: (Sidewall Height (2.B) + Depth to Cover Pipe (2.H)) X Bottom Area (2.C) = cubic feet  
 (  +  ) X  =  ft<sup>3</sup>  
 Divide ft<sup>3</sup> by 27 ft<sup>3</sup>/yd<sup>3</sup> to calculate cubic yards:  
 ft<sup>3</sup> ÷ 27 =  yd<sup>3</sup>

**3. BED CONFIGURATION:(less than 6% slope)**

- A. Required *Bottom Area*:  ft<sup>2</sup>
- B. Select size *Multiplier*:  1.0 = pressurized  
 1.5 = gravity (not allowed in rapidly permeable soils)
- Designed Bottom Area*:  ft<sup>2</sup>
- C. Select *Bed Width*:  ft      Maximum width = 25 ft. (pressurized)  
 Maximum width = 12 ft. (gravity)
- D. Calculate *Bed Length*: *Designed Bottom Area* (3.B) ÷ *Bed Width* (3.C) = *Length*  
 ft<sup>2</sup> ÷  ft =  ft
- E. Select *Sidewall Absorption*:  inches below the pipe =  ft
- F. Calculate *Rock Volume*: (*Rock Depth* (3.E) + 0.5 foot) X *Adjusted Bottom Area* (3.B) = ft<sup>3</sup>  
 (  ft + 0.5 ) X  =  ft<sup>3</sup>
- Calculate *Volume in cubic yards*: *Rock volume in cubic feet* (3.F) ÷ 27 = *cubic yards*  
 ÷ 27 =  yd<sup>3</sup>

**4. ORGANIC LOADING: (if pretreatment is being used)**

- A. *Organic Loading* = *Design Flow* X *Estimated BOD* in mg/L in the effluent X 8.35 ÷ 1,000,000 (See Table III)  
 X  mg/L X 8.35 ÷ 1,000,000 =  lbs BOD
- B. Calculate *System Organic-Loading*: *lbs. BOD* (4.A) ÷ *Bottom Area* (2.C) or (3.B) = lbs/day/ft<sup>2</sup>  
 lbs ÷  ft<sup>2</sup> =  lbs/day/ft<sup>2</sup>


Table III (7083.4030)	
BOD Treatment	BOD (mg/L)
Level A	15
Level B	25
Level C	125

Comments:

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Michael Jungbauer

(Designer)

  
 (Signature)

L3227

(License #)

10/3/2011

(Date)

# Pump Selection Design Worksheet



## 1. PUMP CAPACITY

### 1. Pumping to Gravity Distribution

- A. Minimum discharge is 10 GPM (15 GPM recommended)  
 B. Maximum discharge is 45 GPM.

15 GPM

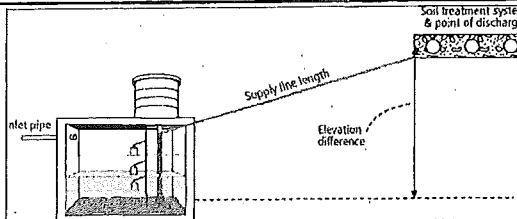
### 2. Pressure Distribution - See Pressure Distribution Worksheet

Required Flow Rate (Line 20 of Pressure Distribution Worksheet)

15 GPM

## 2. HEAD REQUIREMENTS

3. Elevation Difference  ft  
 between pump and point of discharge:



4. Distribution Head Loss:  ft

Additional Head Loss:  ft  
 (due to special equipment, etc.)

Distribution Head Loss		
Gravity Distribution = 0ft		
Pressure Distribution based on Minimum Average Head Value on Pressure Distribution Worksheet:		
1 ft	=	5ft
2ft	=	6ft
5ft	=	10ft

### Friction Loss

5. Supply Pipe Diameter:  Inches

6. Based on Friction Loss in Plastic Pipe per 100ft from Table I:

Friction Loss =  ft per 100ft of pipe

Flow Rate (GPM)	Nominal Pipe Diameter				
	1	1¼	1½	2	3
10	5.51	1.45	0.69	0.20	-
12	7.72	2.03	0.96	0.28	-
14	10.27	2.70	1.28	0.38	-
16	13.14	3.46	1.63	0.48	-
18	-	4.30	2.03	0.60	-
20	-	5.23	2.47	0.73	0.11
25	-	7.90	3.73	1.11	0.16
30	-	11.07	5.23	1.55	0.23
35	-	14.73	6.96	2.06	0.30
40	-	-	8.91	2.64	0.39
45	-	-	11.07	3.28	0.48
50	-	-	13.46	3.99	0.58
55	-	-	-	4.76	0.70
60	-	-	-	5.60	0.82
65	-	-	-	6.48	0.95
70	-	-	-	7.44	1.09

7. Determine *Equivalent Pipe Length* from pump discharge to soil dispersal area discharge point. Estimate by adding 25% to supply pipe length for fitting loss.  
*Supply Pipe Length X 1.25 = Equivalent Pipe Length*

Supply Pipe Length:  ft X 1.25 =  ft

8. Calculate *Supply Friction Loss* by multiplying *Friction Loss Per 100ft* (Line 6) by the *Equivalent Pipe Length* (Line 7) and divide by 100.

Supply Friction Loss =  
 ft per 100ft X  ft + 100 =  ft

10. *Total Head* requirement is the sum of the *Elevation Difference* (Line 3), the *Distribution Head Loss* (Line 4), and the *Supply Friction Loss* (Line 8)

ft +  ft +  ft

Total Head Required:  ft

## 3. PUMP SELECTION

A pump must be selected to deliver at least 15 GPM (Line 1 or Line 2) with at least 13 feet of total head.

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Michael J Jungbauer

(Designer)

(Signature)

L3227

(License #)

October 3, 2011

(Date)

# Pump Tank Sizing, Dosing and Float and Timer Setting Design Worksheet



## 1. DETERMINE AREA AND GALLONS PER INCH

1. A. Rectangle area = Length (L) X Width (W)

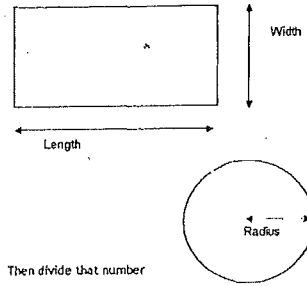
$$6.0 \text{ ft} \times 8.0 \text{ ft} = 48.0 \text{ ft}^2$$

B. Circle area =  $\pi r^2$  (3.14159) X radius X radius

$$3.14 \times \text{Radius}^2 = \text{ft}^2$$

C. Get area from manufacturer

$$\text{ft}^2$$



2. Calculate Gallons Per Inch:

There are 7.48 gallons per cubic foot. Therefore, multiply the area from 1.A, 1.B, or 1.C by 7.48 to determine how many gallons the tank holds. Then divide that number by 12 to calculate the gallons per inch.

$$(\text{Area} \times 7.48 \text{ gallons/ft}^3) / (12 \text{ in/ft}) = 48.0 \text{ ft}^2 \times 7.5 \div 12 \text{ in/ft} = 29.9 \text{ Gallons Per Inch}$$

## 2. TANK CAPACITY

3. Select the required Minimum Tank Capacity based on the table to the right

600 Gallons

Design Flow (Gallons Per Day)	Minimum Pump Tank Capacity (Gallons)	
0-600	500	or Alternating Dual Pumps
601-4,999	100% of the Design Flow	or Alternating Dual Pumps
5,000-9,999	50% of the Design Flow	and Alternating Dual Pumps

4. Calculate Total Tank Volume

A. Depth from bottom of Inlet pipe to tank bottom:

48 in

B. Total Tank Volume = Depth from bottom of Inlet pipe (Line 4.A) X Gallons/Inch (Line 2)

$$48 \text{ in} \times 29.9 \text{ Gallons Per Inch} = 1436.16 \text{ Gallons}$$

5. Calculate Volume to Cover Pump (The Inlet of the pump must be at least 4-inches from the bottom of the pump tank & 2-3 inches of water covering the pump is recommended)

(Pump and block height + 2 inches) X Gallons Per Inch (Line 2)

$$(4 + 2 \text{ inches}) \times 29.9 \text{ Gallons Per Inch} = 179.52 \text{ Gallons}$$

Volume of Liquid In Pipe	
Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

## 3. DOSING VOLUME

7. Calculate Minimum Pumpout Volume (5 times Volume of Supply and Distribution Pipes)

Volume of Distribution Piping - Line 17 of the Pressure Distribution Worksheet

Gallons

Minimum Pumpout Volume = Volume of Distribution Piping X 5

$$\text{Gallons} \times 5 = 125 \text{ Gallons}$$

8. Calculate Maximum Pumpout Volume (25% of Design Flow)

$$\text{Design Flow: } 600 \text{ GPD} \times 0.25 = 150 \text{ Gallons}$$

9. Dosing Volume = Select a volume for 4-5 doses per day and is between the minimum (Line 7) and maximum (Line 8) pumpout volume:

125 Gallons

10. Calculate Doses Per Day = Design Flow / Dosing Volume

$$600 \div 125 = 4.8 \text{ Doses Per Day}$$

11. Calculate Drainback:

A. Diameter of Supply Pipe =

2 inches

B. Length of Supply Pipe =

105 feet

C. Volume of Liquid Per Lineal Foot of Pipe =

0.170 Gallons

D. Drainback = Length of Supply Pipe X Volume of Liquid Per Lineal Foot of Pipe

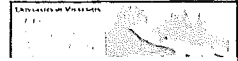
$$105 \times 0.170 = 17.9 \text{ Gallons}$$

12. Total Dosing Volume = Dosing Volume (Line 9) minus Drainback (Line 11.D)

$$125 - 17.9 = 107.1 \text{ Gallons}$$

## 4. FLOAT AND TIMER SETTINGS

# Pump Tank Sizing, Dosing and Float and Timer Setting Design Worksheet



## A. DEMAND DOSE FLOAT SETTINGS

13. Calculate Float Separation Distance using Dosing Volume.

Dosing Volume (Line 12) / Gallons Per Inch (Line 2)

$$\boxed{125} \div \boxed{29.9} = \boxed{4.2} \text{ Inches}$$

14. Calculate Gallons for Alarm (typically 2-3 Inches)

Alarm Depth (Inch) x Gallons Per Inch (Line 2)

$$\boxed{2} \times \boxed{29.9} = \boxed{59.8} \text{ Gallons}$$

15. Calculate Total Gallons = Gallons Over Pump (Line 5) + Dosing Volume (Line 9) + Gallons for Alarm (Line 14)

$$\boxed{180} + \boxed{125.0} + \boxed{60} = \boxed{364} \text{ Gallons}$$

16. Minimum Tank Depth = Total Gallons (Line 15) / Gallons Per Inch (Line 2)

$$\boxed{364} \div \boxed{29.9} = \boxed{12} \text{ Inches}$$

17. Measuring from bottom of tank:

A. Distance to set Pump Off Float = Pump Height + Block Height (Line 5) + 2 Inches

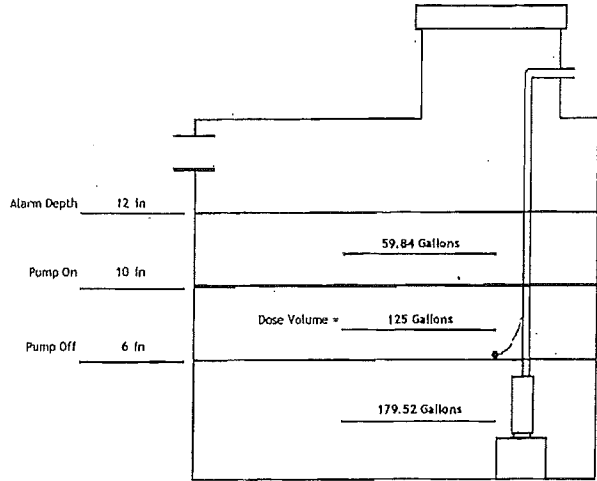
$$\boxed{4} + \boxed{2} = \boxed{6} \text{ Inches}$$

B. Distance to set Pump On Float = Distance to set Pump-Off Float (Line 17.A) + Float Separation Distance (Line 13)

$$\boxed{6} + \boxed{4.2} = \boxed{10} \text{ Inches}$$

C. Distance to set Alarm Float = Distance to set Pump-On Float (17.B) + Alarm Depth (Line 14)

$$\boxed{10} + \boxed{2.0} = \boxed{12} \text{ Inches}$$



## B. TIME/DOSING SETTINGS

18. Required Flow Rate:

A. From Design (Line 20 of Pressure Distribution Worksheet):  GPM

Or calculated: GPM = Change in Depth (in) x Gallons Per Inch (Line 2) / Time Interval in Minutes

$$\boxed{\phantom{000}} \times \boxed{29.9} \div \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ GPM}$$

19. Choose a Flow Rate from Line 18.A or 18.B above.

GPM

20. Calculate TIMER ON setting:

Dosing Volume (Line 9) / GPM (Line 18)

$$\boxed{125} \div \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ Minutes ON}$$

21. Calculate TIMER OFF setting:

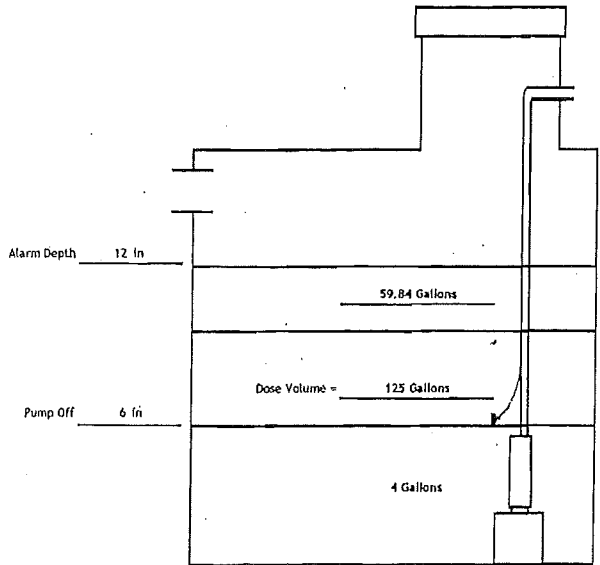
Minutes Per Day (1440) / Doses Per Day (Line 10) - Minutes On (Line 17)

$$1440 \div \boxed{4.8} - \boxed{\phantom{000}} = \boxed{\phantom{000}} \text{ Minutes OFF}$$

22. Measuring from bottom of tank:

Distance to set Pump Off Float = Gallons to Cover Pump (Line 5) / Gallons Per Inch (Line 2):

$$\boxed{179.52} \div \boxed{29.9} = \boxed{6} \text{ Inches}$$



Note: Installer, designer or service provider needs to verify actual GPM of pump installed based on pump calibration measurements to ensure that the timer settings established here are accurate or need to be adjusted.

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Michael J Jungbauer

L3227

10/3/2011

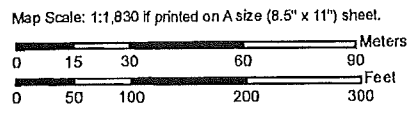
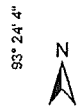
(Designer)

(Signature)

(License #)


































(Date)

Soil Map—Anoka County, Minnesota



Soil Map--Anoka County, Minnesota

**MAP LEGEND**

 Area of Interest (AOI)	 Very Stony Spot
<b>Soils</b>	 Wet Spot
Soil Map Units	 Other
<b>Special Point Features</b>	<b>Special Line Features</b>
 Blowout	 Gully
 Borrow Pit	 Short Steep Slope
 Clay Spot	 Other
 Closed Depression	<b>Political Features</b>
 Gravel Pit	 Cities
 Gravelly Spot	<b>Water Features</b>
 Landfill	Streams and Canals
 Lava Flow	<b>Transportation</b>
 Marsh or swamp	 Rails
 Mine or Quarry	 Interstate Highways
 Miscellaneous Water	 US Routes
 Perennial Water	Major Roads
 Rock Outcrop	 Local Roads
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	
 Spoil Area	
 Stony Spot	

**MAP INFORMATION**

Map Scale: 1:1,830 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Anoka County, Minnesota  
 Survey Area Data: Version 8, Dec 14, 2009

Date(s) aerial images were photographed: 7/18/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Anoka County, Minnesota (MN003)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NyB	Nymore loamy sand, 2 to 6 percent slopes	1.6	10.8%
NyC	Nymore loamy sand, 6 to 12 percent slopes	11.2	76.3%
ZmB	Zimmerman fine sand, 2 to 6 percent slopes	1.9	12.9%
<b>Totals for Area of Interest</b>		<b>14.7</b>	<b>100.0%</b>